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A REVIEW OF FOREIGN FARM POLICY, PRODUCTION, AND TRADE

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CORRECTION: Foreign Agriculture, January 1942, article Food Consumption in the United Kingdom: Note for Tables 1 and 2 that ration for jam, marmalade, etc., was raised to 4 ounces per person per week from July 28, 1941.

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CUBAN AGRICULTURE . . . . .

By P. G. Minneman*

Cuba is not only one of our nearest Latin American neighbors but also one of the most important from the standpoint of trade with the United States, particularly in agricultural products. Close commercial relations have been maintained between the two countries ever since the United States helped Cuba obtain its independence more than 40 years ago. Roughly three-fourths of Cuba's foreign trade is with the United States. Cuba's entire economic life is dominated by its sugar industry, which accounts for about 80 percent of the country's total exports. During recent years, the value of sugar exports has been low and Cuba is therefore forced to diversify its production in order to find alternative employment and alternative exports. Much progress has already been made in this direction.

The palm-covered island of Cuba, frequently called the Pearl of the Antilles, is the largest of the West Indian islands and lies in the Caribbean Sea only about 90 miles south of Key West, Fla. It is nearer to the United States than any other Latin American country except Mexico. Cuba has an area of 44,164 square miles (28.3 million acres), or is about the size of Pennsylvania, and is rather densely populated, with a total of about 4.2 million inhabitants. Its climate is subtropical and frost-free, but it has only a moderate rainfall. Sugar and, to a smaller extent, tobacco are by far the most important products exported.

The long narrow island extends east and west about 760 miles from end to end, but is only 25 to 100 miles wide in most places. As one of our nearest neighbors, Cuba is located in a strategic position for the defense of the United States. It lies squarely across the entrance to the entire Gulf of Mexico, whose waters wash the shores of five of the Southern States, and lies across the northern approach through the Caribbean Sea to the Panama Canal. President McKinley in his last words at Buffalo pointed out that other considerations were even more important than the commercial ones in maintaining close relations between the two countries:

* Foreign Service Officer on detail from the Department of State and member of a technical agricultural commission that early in 1941 studied Cuban agriculture at the request of the Cuban Government. This article is a summary of a more detailed study now in the process of publication. Grateful acknowledgment is given to officers of the United States Consulate General in Habana for information contained in consular reports and to the Cuban Ministry of Agriculture for basic information and the use of the photographs in this article.

All values in this report are shown in dollar equivalents without conversion at the rate of 1 peso = 1 dollar.

FIGURE 1.—Cuba and the Caribbean area.

The peace of Cuba is necessary to the peace of the United States; the health of Cuba is necessary to the health of the United States; the independence of Cuba is necessary to the safety of the United States.

Not only is the goodwill and close cooperation between Cuba and the United States vital for the national defense of both countries but from the standpoint of the volume of trade with the United States, particularly in agricultural products, Cuba is also the most important of all the Latin American countries. During recent years, 1936-40, trade with Cuba averaged about 200 million dollars annually and constituted

about one-fifth of total United States trade with all of the 20 Latin American republics. More than three-fourths of Cuba's total exports during recent years have been to the United States, and, in turn, Cuba has obtained more than two-thirds of all its imports from this country.

From Cuba the principal United States imports are products that either are not produced in the United States or are not produced in sufficient quantities, such as cane sugar, aromatic cigar tobacco, molasses, tropical fruits, winter vegetables, rum, coffee, henequen, sisal, sponges, and ores of manganese, copper, iron, and chromium. The total value of imports from Cuba during the past 5 years varied from 105 to 148 million dollars annually. United States exports to Cuba consist principally of industrial products, but include about 22 million dollars' worth of agricultural products, such as rice, wheat flour, lard, pork, cotton, vegetables, and fruit, and about 5 million dollars' worth of forest products.

Cuba was under the rule of Spain for nearly 400 years until 1898. Although Cuba made several attempts to obtain independence, this was not accomplished until the above date with the help of the United States. By May 20, 1902, the Cuban Government began its independent existence along democratic lines, with an elected president and legislature.

The Republic, including the Isle of Pines and numerous smaller islands, is divided into six Provinces with the following area and population as of June 30, 1938:

	Area *Square miles*	*Population* *Number*
Pinar del Río	5,206	363,654
La Habana[1]	3,170	1,042,709
Matanzas	3,256	362,713
Las Villas[2]	8,257	868,672
Camagüey	10,064	437,720
Oriente	14,211	1,139,731
Total	44,164	4,215,199

THE PEOPLE

When Columbus discovered Cuba on his first voyage on October 28, 1942, the island was inhabited by Indians. These offered little resistance to the Spanish conquerors and were soon reduced to virtual slavery. By the end of the sixteenth century so few Indians remained that a mestizo population - a mixture of Spanish and Indian blood common in most other Latin American countries - never developed in Cuba.

During the four centuries of Spanish rule the Cuban people became predominantly Spanish in race and culture. Negro slaves from Africa were imported into Cuba as early as 1517, and subsequently the importation of slaves increased to an estimated total of a million before slavery was completely abolished in 1866. The census of a hundred years ago shows that the colored population exceeded the white population, but since then the proportion of colored has declined to only about 24 percent in 1931, although the proportion of mulattoes has increased. The present population of Cuba, therefore, is Spanish, colored, and a mixture of these two. Some Cuban observers

[1] The Province of Habana includes the Isle of Pines.

[2] Las Villas is the new name for the Province formerly called Santa Clara. The change became effective with the new constitution in July 1940.

estimate that about one-half of the total population may be classified as white and about one-fourth each as mulatto and colored.

The island is more densely populated than the United States or the South American countries but not nearly so densely populated as some of the other Caribbean islands, particularly Puerto Rico and Haiti. The capital city of Habana, with nearly three-quarters of a million inhabitants, has about one-sixth of the total population.

The income, wage rates, and standard of living of most of the poeple in Cuba are not comparable with those in the northern part of the United States but approach more nearly those in the Southern States and are well above those in many other Latin American countries. Wage rates have been considerably improved as a result of the minimum-wage legislation, which specifies minimum rates for all kinds of work, including agricultural laborers, of 80 cents per 8-hour day, plus vacations with pay and some insurance provisions. The principal difficulty from the standpoint of the worker, however, is not so much the rates of wages as the inability to find steady employment.

The well-being of the mass of poorer people, particularly those dependent upon the sugar industry, varies widely from month to month, depending upon whether the sugar mills are operating. Most of this group do not have sufficient income to permit them to accumulate reserve funds to carry them through the ensuing season of unemployment. Consequently, when the mills close the standard of living is greatly reduced. The sugar-harvest season, called the zafra, usually begins in January and continues for 2 or 3 months, depending upon the amount of sugar to be made - in other words, the size of the sugar quota. During this period of employment, most of the wages are spent and an atmosphere of relative prosperity develops. Later during the dead season (tiempo muerto), many are without employment and, not having accumulated reserve funds, are without land or equipment to grow their own food. They live on a reduced diet, consume less meat, milk, beans, and rice, and rely principally on cheap native root crops and bananas until the next zafra.

Because of the mild semitropical climate, it is not necessary to expend as much for housing and warm clothing or have as rich a diet as in countries with cooler climates. Furthermore, many staple articles of food can be easily grown and are readily available. This is particularly true of the starchy foods sufficient for subsistence, such as bananas, yuca, malangas, sweetpotatoes, yams, and many native fruits. Relatively few fresh or leafy vegetables, such as cabbage, spinach, or lettuce, are consumed, even though they may be grown easily.

NATURAL RESOURCES

Cuba is endowed with an excellent climate, much good soil for agriculture and forestry, and some valuable deposits of minerals, but has practically no coal or petroleum for fuel. The topography varies widely, from large marshes to mountainous districts, but most of the island may be described as rolling, with numerous wide valleys and plains. Cuba has about 2,000 miles of coast line. The north coast is mostly steep and rocky and the central section is bordered by innumerable small, sparsely populated islands and coral reefs covered with mangrove trees. The southern coast, with the exception of the eastern end, is generally low and swampy, including the immense Zapata Swamp, about 100 miles long and as much as 35 miles wide.

The mountains are principally in three groups, located at each end and in the middle of the island. The largest are the Sierra Maestra in the extreme east and southeast, principally along the southern coast. In this region is the Pico de Turquino, the highest point on the island, with an altitude of 7,870 feet. Other ranges, principally the Sierra de Los Órganos in the west, run parallel to the northern coast. A third large but scattered group of smaller mountains is located in the middle of the island centering in the eastern part of the Province of Las Villas. Rivers are generally short, narrow, and shallow, and practically none are navigable. Since the island is very narrow, there are only two water sheds, to the north and to the south. The northern coast, being the higher, has the shorter rivers.

Between the mountains and the coasts are fairly level areas with excellent soil. In the extreme western part lie the famous tobacco plantations, or vegas, and in the west-central part the plains and valleys are devoted to crops, but in the east-central part are extensive plains, or sabanas, with poorer and shallower soil covered with natural pasture used largely for cattle raising.

The soils are generally fertile and friable clays and sandy clay loams, but vary widely as to types. Some are different from any found in the United States. One of the most extensive and outstanding types is the brick-red to purple-red Matanzas clay found especially in middle and western Cuba. This soil is generally fairly fertile and deep and is underlain by porous limestone, permitting ready drainage. Even though it contains an unusually high percentage of clay particles, it is friable and may be worked soon after heavy rains. There are also large areas of sandy soil, the most important of which are in western Cuba, in the savanas of Camagüey and in the Isle of Pines. These soils have a relatively low clay content and a high proportion of quartz sand, are generally well-drained, but are deficient in humus and lime and usually require commercial fertilizer. There are, in addition, numerous other types of soil, including fertile, heavy gray and black clays.

Cuba's climate is suitable for the production of most tropical plants. The temperature is uniformly warm and frost-free, and the rainfall is plentiful in summer but light in winter. Although located just south of the Tropic of Cancer, which passes between Florida and Cuba, the climate is not entirely tropical because of the tempering effect of the prevailing winds and the ocean. The following tabulation shows the mean monthly temperature at Habana and the average rainfall for the island (1900-24):

	Temperature °F.	*Rainfall Inches*
January	70.6	1.9
February	70.8	1.6
March	72.9	2.0
April	75.1	2.8
May	77.5	6.9
June	79.2	8.3
July	80.1	5.6
August	80.3	5.7
September	79.8	7.8
October	77.8	7.0
November	74.3	3.3
December	71.9	2.0
Annual	75.9	54.9

The temperature varies only slightly from day to night and from summer to winter. In Habana, for instance, it averages about 80° F. from June to September and only

10° cooler in January and February. The extreme range of variation from winter to summer is usually from a low of 45° or 50° to a peak of nearly 100°.

Rainfall averages 54.9 inches a year, which is from 10 to 25 percent more than in most of the eastern parts of the United States but is much less than in many tropical countries. It is fairly evenly distributed over the island, varying from about 36 inches to 70 inches. The most important characteristic of the rainfall is its seasonal distribution with wet summers and dry winters. The rainy season usually begins about the middle of May and lasts through October with about three-fourths of the yearly rain during these 6 summer months. The other 6 months, November to April, are known as la seca.

Cuba's forest resources have been very severely reduced, particularly during the past 30 years. Originally forests covered almost the entire island, but now they are insufficient to supply domestic needs. Early records indicate that tropical forests covered most of the island, with such woods as mahogany, Spanish cedar, ebony, granadilla (red ebony), pine, majagua, and many other varieties suitable for fine lumber as well as for tanning. These were sharply reduced through lumber shipments to Spain, but the most severe and wasteful destruction occurred when the sugar industry expanded rapidly in the early twenties after the World War. Forests were cut and most of the wood was burned on the ground as soon as it became dry. The irony of the situation lies in the fact that most of the land on which the forests were thus destroyed was not actually needed or well adapted for sugar production and now lies barren.

It was estimated that in 1919 (census) there still remained about 13 million acres of forests, covering nearly one-half of Cuba's total area. By 1940 the forests were reduced to such an extent that the remaining area was variously estimated at from 3 to 3.5 million acres. Forests now cover only 10 to 15 percent of Cuba's total land area and are principally located in inaccessible areas.

Cuba is confronted with two great problems in connection with forest policy: (1) preservation of existing forests to prevent further wholesale destruction, and (2) extensive reforestation to put much of the present wasteland back into forest production. Many kinds of forest trees, including valuable hardwoods, grow well in Cuba, and because of freedom from frost the growing season continue throughout the year.

Charcoal is one of Cuba's most important forest products, with sales in 1939 valued at nearly 2 million dollars. It is prepared by small farmers in mountainous and swampy forest regions and is hauled to the cities to be used as the principal fuel for cooking. For this purpose it has the advantage of being easily transported, being lighter in weight than wood, and may be burned in open fires without smoke or soot.

Cuba has deposits of a number of important minerals. Exports during recent years (1937-40) varied from 4.6 to 7.2 million dollars annually, but constituted only 3 or 4 percent of the total value of all exports. Most important are ores of manganese and copper, and of lesser importance are iron, chromium, gold, and asphalt. Cuba is the largest producer of manganese in Latin America and the fourth largest producer of copper. Iron-ore deposits are extensive and accessible but have not been widely developed. Fuel is Cuba's greatest deficiency. The island has practically

no coal or petroleum, and consumption requirements of these two groups of products must therefore be obtained from abroad. Imports of coal and coke usually amount to more than a million dollars a year and imports of petroleum and its products amount to about 6 million dollars.

Cuba's manufacturing enterprises, with the exception of sugar refining, are small but have been increasing during recent years under the stimulus of tariff protection. The total value of the industrial production, excluding sugar and other agricultural products, was reported at 64 million dollars in 1939. Among the industrial goods produced primarily from domestic raw materials are refined sugar, sirups, rum, alcohol, cigars, cigarettes, rope and twine, jerked beef, dairy products, canned fruits, furniture, cement, brick, tile, and sponges. Among those principally from imported raw materials are paint, soap, perfumes, toilet preparations, shoes, hats, hosiery, other clothing, cotton piece goods, blankets, towels, paper and cardboard, tin cans, aluminum ware, matches, and mineral waters.

The Isle of Pines is the largest of the other islands belonging to the Republic of Cuba. It is located about 66 miles (by boat) directly south of the west-central part of Cuba, covers an area of 755,000 acres, and had a population of 10,165 in 1938. This island is about 34 miles across from north to south, and 40 miles at its greatest length from east to west. A marsh running across the island from east to west divides it into two parts. The southern part is swampy, at no point exceeding 50 feet above sea level, is covered with tropical hardwoods, and is practically uninhabited. The northern part is predominantly flat and gently rolling and surrounded by a tidal mangrove swamp along the coast. It has a few scattered mountains but most of the northern part has an elevation of less than 200 feet. Only the northern part is suitable for farming; the soil is sandy and gravelly, with natural vegetation of wire grass, palmetto, and pines. Fertility is relatively low, but excellent citrus fruits and winter vegetables for export are produced through the application of commercial fertilizer.

ORGANIZATION OF AGRICULTURE

Agriculture is by far the most important industry, accounting for over 90 percent of the country's total exports. Cuba has an abundance of good soil, a year-round growing season, and an ample supply of labor. Nevertheless, much of its agriculture is of an extensive type: practically no grain is fed to livestock, and little fertilizer, irrigation, or machinery is used in crop production. If crop production is expanded, it is usually more profitably done by planting an additional acreage than by applying commercial fertilizer or expensive equipment.

Land Use and Types of Farms

Little more than one-half of Cuba's total land area is in farms, including the large sugar centrals, cattle ranches, and mountain coffee plantations. It is estimated that nearly 60 percent of the total area in farms is tillable, but considerably less than one-half of this is actually under cultivation. Table 1 shows the estimated acreage in the various crops and the other uses of land in 1940.[3]

[3] I. RESILLEZ NIEVES, in TIERRA Y HOMBRE COMO ELEMENTOS PRODUCTORES, Rev. de Agr. [Cuba] 5: [2031]-2032, May 1939, estimates that the area in sugar plantations amounts to 6.3 million acres; in cattle and coffee ranches, 8.2 million; and in small farms, about 4 million.

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Most of Cuba's farms are highly specialized, as for example, sugar centrals, areas under vegetables and bananas for export, tobacco vegas, coffee and cacao plantations in the mountains, and cattle ranches. Sugarcane lands are scattered in fertile areas throughout the island, particularly in the central and eastern part. Most of the mill lands, as well as the surrounding smaller farms, are devoted primarily to the production of cane. These farms have little livestock, and their other crops are principally to supply family food, although some also produce beans and corn for sale.

TABLE 1.—*Land Use in Cuba, 1940*

LAND USE	AREA	PERCENTAGE DISTRIBUTION	
		CULTIVATED	TOTAL
Cultivated area in:	*1,000 acres*	*Percent*	*Percent*
Sugarcane	2,285	57.0	.....
Bananas and plantains	400	10.0	.....
Corn	300	7.5	.....
Coffee	150	3.8	.....
Tobacco	108	2.7	.....
Beans	92	2.3	.....
Peanuts	80	2.0	.....
Sweet potatoes and yams	87	2.2	.....
Potatoes	50	1.3	.....
Yuca	56	1.4	.....
Malanga	52	1.3	.....
Rice	50	1.2	.....
Fruits (tree)	45	1.1	.....
Vegetables	38	1.0	.....
Henequen, sisal	35	0.9	.....
Pineapples	13	0.3	.....
Cacao	3	0.1	.....
Other crops	156	3.9	.....
Total	4,000	100.0	14.1
Tillable but uncultivated area	5,500	.....	19.5
Permanent pasture and wasteland	4,000	.....	14.1
Woods	2,500	.....	8.8
Total in farms and estates	16,000	.....	56.5
Total not in farms	12,265	.....	43.5
Total area of Cuba	28,265	.....	100.0

Tobacco is the principal cash crop in certain areas in the central and western parts. In these regions are also many farms specializing in the production of pineapples and winter vegetables for export, such as tomatoes, eggplant, lima beans, and peppers. Contrasted sharply to these are the large, extensive cattle ranches in the east-central part, similar to the ranches in the western part of the United States. Coffee and cacao plantations are almost entirely in eastern Oriente, though

there are a few near Cienfuegos in Las Villas. These are essentially mountain industries, unlike any other major type of agriculture. Some grazing areas in the mountains are also used for cattle. Banana production for export has been confined almost entirely to the valleys in the mountainous areas in the extreme eastern end of the island, where it constitutes a sizable industry and by far the most important type of farming in that region. All of the above-mentioned crops except winter vegetables are of a perennial nature and do not require replanting except every 5 to 20 years and therefore cannot be used in a rotation with other crops.

TABLE 2.–*Land in farms in Cuba, by Provinces, 1930*

PROVINCE	LAND IN FARMS						NUMBER OF FARMS	AVERAGE SIZE OF FARMS
	TOTAL LAND AREA	CULTIVATED	TILLABLE BUT NOT CULTIVATED	WOODS	OTHER NON-TILLABLE	TOTAL		
	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Number*	*Acres*
Pinar del Río	3,350	420	541	374	453	1,789	11,457	156
La Habana	2,040	417	337	96	161	1,010	11,393	89
Matanzas	2,095	482	435	70	295	1,282	7,429	173
Las Villas	5,313	871	1,428	411	642	3,352	23,280	144
Camagüey	6,475	962	1,133	633	928	3,656	7,768	471
Oriente	9,144	1,278	1,631	967	1,497	5,373	26,069	206
Total or average	28,417	4,430	5,505	2,551	3,976	16,462	87,396	188

Estadística Agro-Pecuaria, Cuba Sec. de Agr., Com. y Trabajo, 1928-29.

The principal crops grown on general farms are the food crops for direct consumption, either for use on the farm or for sale to the cities. Principal among these are corn, beans, sweetpotatoes, potatoes, yams, yuca, malanga, rice, bananas, and plantains for local consumption. Peanuts for sale to oil crushers recently have also become an important cash crop in general farming.

Most farmers do not keep much livestock, the main production of cattle being on the large ranches in east-central Cuba. As a rule, farmers keep one or two horses for riding, several oxen to do all the draft work, in some cases a few mules for pack work, a few hogs fed largely on palmiche nuts, and a few chickens. The occasional sale of a few hogs and eggs constitutes the major portion of most farmers' income from livestock.

Number, Size, and Operation of Farms

According to the census of 1930 Cuba had 87,396 farms, including all types of farms, plantations, and ranches. Of this number nearly one-third were smaller than 33 acres (1 caballería) but there were some 2,000 farms larger than 1,000 acres each. The average size for the country was 188 acres, but this figure is not at all representative. The following tabulation shows the distribution by size groups according to the 1930 census:

Acres per farm	*Number of farms*	*Percentage of total*
Less than 33	27,685	31.6
34 to 66	23,413	26.8
67 to 99	11,414	13.1
100 to 199	11,690	13.4
200 to 299	4,111	4.7
300 to 829	6,000	6.9
830 to 1659	2,011	2.3
More than 1659	1,072	1.2
Total	87,396	100.0

According to the 1930 census about 37 percent of the total number of farms and 40 percent of the acreage was operated directly by the owners. An additional 21 percent of the land, particularly the larger holdings, was operated by "administration," that is, by hired managers and hired laborers (table 3). About one-half of all the farmers rented their land, usually on a cash basis, but this accounted for less than 40 percent of the total acreage and less than 30 percent of the cropland.

Of the 16 million acres of land in farms in 1940, sugar companies owned about 5.6 million acres and in addition operated about 2 million acres more through renting from other owners, thus controlling about 47 percent of the total acreage in farms. However, by far the greater part of the sugarcane - even that grown on the mill-owned lands - is actually produced by colonos (farmers), who rent the land from the mills. Many of the large farms operated directly by the owners or managers are cattle ranches, the total acreage of which, although generally poorer land, is estimated to be nearly as great as that owned by the sugar companies.

TABLE 3.--*Method of operation of farms in Cuba, 1930 census*

METHOD OF OPERATION	FARMS	AREA		PERCENTAGE DISTRIBUTION OF FARM AREA		AVERAGE AREA PER FARM	
		TOTAL	CULTIVATED	TOTAL	CULTIVATED	TOTAL	CULTIVATED
		1,000	*1,000*				
	Number	*acres*	*acres*	*Percent*	*Percent*	*Acres*	*Acres*
Administration[1]	10,798	3,477	1,752	21.1	39.5	322	162
Owners	32,314	6,499	1,420	39.5	32.1	201	44
Cash rent	35,340	5,420	869	32.9	19.6	153	25
Share rent	8,944	1,066	389	6.5	8.8	119	44
Total or average	87,396	16,462	4,430	100.0	100.0	188	51

[1] Largely absentee ownership, operated by managers and hired labor.

Censo de Población, 1931 - Estadísticas Industrial y Agrícola de Cuba.

Value and Equipment of Farms

Land values in Cuba are relatively low. According to the 1930 census the average value of land alone was $24.35 an acre. The value of most farm land at present is probably from $10 to $25 an acre. Poorer grazing land, of course, may be purchased for considerably less, whereas good tobacco and winter-vegetable land and that located near highways and markets is much higher.

Cuban farmers have very little in the way of farm buildings or equipment. Because of the warm, even temperature there is little need for heavily constructed houses or farm buildings to protect occupants against cold weather, as there is in most of the United States. Houses are only one-story high, commonly constructed of very light material with thatched roofs made of palm leaves, and frequently the siding consists of palm-leaf sheaths. The average value of buildings on farms was about $3.35 an acre in 1930 and accounted for little more than 10 percent of the total real-estate valuation.

On most small farms the equipment consists of a two-wheeled oxcart, a plow, a harrow, hoes, axes, and a machete. Although there are numerous moldboard and disk plows, the old pointed plow without moldboard, which simply loosens the soil and does not turn it over, is still in common use. With this type of plow it is necessary to replow the field crosswise three or four times. Planting is customarily done by hand; cultivation consists principally of hoeing; and harvesting of practically all crops is by hand. Only a few large farms have tractors or such large equipment as seeders, grain drills, binders, threshers, trucks, etc. The two-wheeled oxcart is the standard means of hauling, except where colonos have access to the use of the field railways belonging to sugar centrals. Small farmers in outlying areas, especially in the mountains, rely largely on horseback and muleback transportation. The absence of solid roads in rural areas and the farmers' low income prevent extensive use of wagons, trucks, and automobiles. The average value of farm equipment in 1930 was about 80 cents an acre, or from $25 to $200 a farm.

Marketing

Sugarcane is sold directly under contract to the mills; and some other crops, such as tobacco, peanuts, and export vegetables, are sold directly to shippers, sometimes under contract. Most other crops, however, are customarily sold in the nearest village to the local general storekeeper, or bodeguero, who acts as a middleman in almost all economic relations between the farmer and the outside world. The storekeeper not only buys the farmer's products and resells them to larger dealers but also supplies the farmer with groceries, clothing, equipment, etc., usually on credit. Most farmers have little cash and therefore are strictly limited as to the time and method of marketing as well as to the amount and place of their purchases.

Credit

There is no Government system of farm credit in Cuba. Commercial banks, through the sugar mills, provide credit for the production of sugarcane. With respect to credit for other crops reference is made to a study in 1934,[4] which pointed out that agricultural crops for market are generally financed by commercial agents and by local stores or merchants, shackling the producer in such a way that he finds himself compelled to buy and sell to them at prices that are more or less unfavorable to him in direct proportion to his indigency. The nominal rate of interest may not be very high, but the actual charge or the real interest is extremely burdensome. This lack

[4] FOREIGN POLICY ASSOCIATION, COMMISSION ON CUBAN AFFAIRS. PROBLEMS OF NEW CUBA. 523 pp., illus. New York. 1935.

of sufficient credit at reasonable rates and the limited market outlets frequently prevent farmers from growing certain crops that would otherwise be profitable.

Cooperation

The marketing of farm products and the purchase of farm supplies have never been developed on a cooperative basis in Cuba. Among the principal reasons for this are the poor communication and transportation in rural areas, the dependence of the small farms upon credit from the local storekeeper, and the low standard of education in the rural areas. Nevertheless, there are several outstanding examples of successful cooperative enterprises in Cuba, such as a cooperative irrigation society, founded in 1876, a cooperative fire-insurance company in operation about 80 years, and, most important of all, the long-established Spanish regional cooperative societies, or Centros, which specialize in medical aid and social activities.[5]

CROP PRODUCTION

Cuban agriculture is based on crop production both for export and for domestic food. The most important crops for export in the order of their export value are sugar, tobacco, tropical fruits, winter vegetables, henequen, sisal, and coffee.

Sugar

Sugar has dominated the entire Cuban economy for almost three-quarters of a century and Cuba has come to be regarded as the "world sugar bowl" because it exports more sugar than any other country in the world.[6] This industry plays such an important part in the entire Cuban economy that changes in either the price or the volume of exports are directly reflected in the country's internal and import trade. About one-half of all the cultivated land of Cuba is devoted to sugarcane. Since the World War the sugar industry has accounted for more than 80 percent of the value of all exports, and during the 5 years 1936-40 exports amounted to about 121 million dollars annually.

Cuba's soil and climate are particularly well suited for low-cost production, and consequently this industry has been able to maintain its permanent position in the Cuban economy in spite of depressed prices, controlled markets, controlled production, and efforts at crop diversification. Production increased almost steadily until 1925, when it reached a peak of 5.8 million short tons, which is nearly equal to the total sugar consumption of the United States. Production was then reduced in accordance with restrictions under international treaties, except in 1929 when the restrictions were temporarily removed and production again reached nearly 5.8 million tons (fig. 4). The sharp drop in the world market forced a rapid decline in production to a level during recent years (1935-41) of only 2.7 to 3.4 million tons. Sugar

[5] There are 106 of these mutual-benefit associations in Cuba with an estimated membership of about 400,000, although approximately one-half of the associations and most of the membership are in Habana. They furnish one of the world's finest examples of cooperative medicine, but their other activities include education, social activities, recreation, insurance, etc.

[6] Cuba was the world's largest producer until 1932. Since then it has been exceeded by India, although Cuba continues to be the world's largest exporter.

production in individual years depends primarily on the export prospect at the time, since there is usually much more cane available for cutting than is required for the immediate crop. Production, therefore, is reduced by leaving more cane uncut or is increased by cutting a larger portion.

FIGURE 2.—Harvesting sugarcane is done entirely by hand.

In addition to sugar the industry also produces important byproducts, such as molasses, sirups, and distilled products. The total value of these during recent years has varied from 11 million to 21 million dollars annually. Blackstrap, or final molasses, is a byproduct from the manufacture of raw sugar, and its production therefore varies with the quantity of sugar; but high-test molasses and sirups are separate products made directly from surplus cane without allowing the sirup to crystalize.

The sugar industry is operated as a number of large units, called centrals. These consist of huge mills, each surrounded by a large area of cane. In 1940 there were 157 such mills in operation. Most of the mills have a capacity of from 10,000 to 40,000 tons of sugar a season, although with reduced operation during recent years only about one-fifth now produce more than 20,000 tons a year.[7] Most mills are owned by interests in foreign countries, largely the United States, and this foreign ownership, especially of the land, is particularly painful to Cuban national feeling.

About 7.6 million acres,[8] or nearly 28 percent of the island's total area, are under the control of sugar mills, yet not over 3.5 million acres have ever actually been used for the cultivation of sugarcane in any year, and in 1939 only 2.3 million were in cane. Mills also require land for new plantings, roads, pastures, gardens, and occasionally for the protection of their water supply. Nevertheless, it is evident that a large part of the land held for potential sugar production could well be used for other purposes.

[7] The immense size of the mills is shown by the fact that their average value in 1939 was estimated at 2.3 million dollars, including land and equipment. The largest mill attained an output of 170,000 tons of sugar and had nearly 150,000 acres in cane in 1921-22.

[8] In 1939 mill companies owned 5.6 million acres and controlled an additional 2 million acres through lease from private owners. About 1.4 million acres were owned and operated privately by colonos who grow and sell cane to the mills.

TABLE 4.—*Sugar and sugar products exported from Cuba, 1902-40*

PERIOD	RAW SUGAR		REFINED SUGAR		MOLLASSES AND SIRUPS		DISTILLED PRODUCTS		TOTAL
	QUANTITY	VALUE	QUANTITY	VALUE	QUANTITY	VALUE	QUANTITY	VALUE	VALUE
	1,000 tons[1]	*1,000 dollars*	*1,000 tons*[1]	*1,000 dollars*	*1,000 gallons*	*dollars*	*1,000 gallons*	*dollars*	*dollars*
Average:									
1902–5	1,035	48,442	0	0	25,294	768	1,239	240	49,450
1906–10	1,436	70,433	0	0	38,943	910	1,465	302	71,645
1911–15	2,416	127,261	7	415	57,744	1,869	2,878	676	130,221
1916–20	3,621	424,469	7	1,202	152,069	5,700	4,019	2,331	433,702
1921–25	4,518	305,838	7	564	168,901	6,129	2,674	1,305	313,836
1926–30	4,508	194,350	222	11,813	221,338	9,667	1,934	1,323	217,153
1931–35	2,374	57,190	392	13,578	147,805	5,258	1,460	1,554	77,580
1936–40	2,440	84,636	391	20,324	273,870	13,836	492	1,216	120,012
Annual:									
1936	2,516	89,800	395	22,791	254,681	12,940	717	1,341	126,872
1937	2,625	104,845	363	22,441	317,576	19,309	502	1,574	148,169
1938	2,564	82,397	347	17,374	217,809	11,552	496	1,061	112,384
1939	2,602	84,216	468	21,633	257,064	10,221	238	1,020	117,090
1940	1,894	61,920	382	17,382	322,222	15,160	505	1,085	95,547

[1] Short tons.

Com. Exterior, Cuba Min. de Hacienda, Dir. Gen. de Estadís.

Although most of the sugar land is owned by the mills, from 80 to 90 percent of all the cane is produced by colonos, that is the farmers who actually grow the cane and sell it to the mills. In 1939 only 13 percent of the cane was produced by administration, that is, directly by the mills with hired labor, as is shown by the following tabulation:

	Percent
By colonos:	
On mill-owned land	69
On private land	18
Total	87
By administration	13
	100

Growers receive payment for the cane at rates specified by law but varying according to (1) the price of sugar, (2) the percentage of sugar obtained from the cane, and (3) whether the cane is grown on mill land or private land.

It is estimated that nearly one-third of all the laborers in Cuba are employed in the sugar industry.[9] Naturally their prosperity or poverty varies directly with the size and value of the sugar crop. Formerly, when production was much larger, the grinding season continued about 5 months in the period December to May after which

[9] The total number of laborers employed directly in the sugar industry in 1939 was estimated at 525,000, of which about 90 percent were engaged in growing and harvesting the cane and about 10 percent in millwork.

the rainy season makes harvesting difficult. But with the smaller production in recent years the grinding season has been shortened to only about 2 months, during the period January to March, because it is much more economical to operate mills at their normal capacity for a short season than to operate at only a fraction of the normal capacity.

In Cuba sugarcane is grown as a perennial crop with repeated harvests for 10 to 20 years from the same planting.

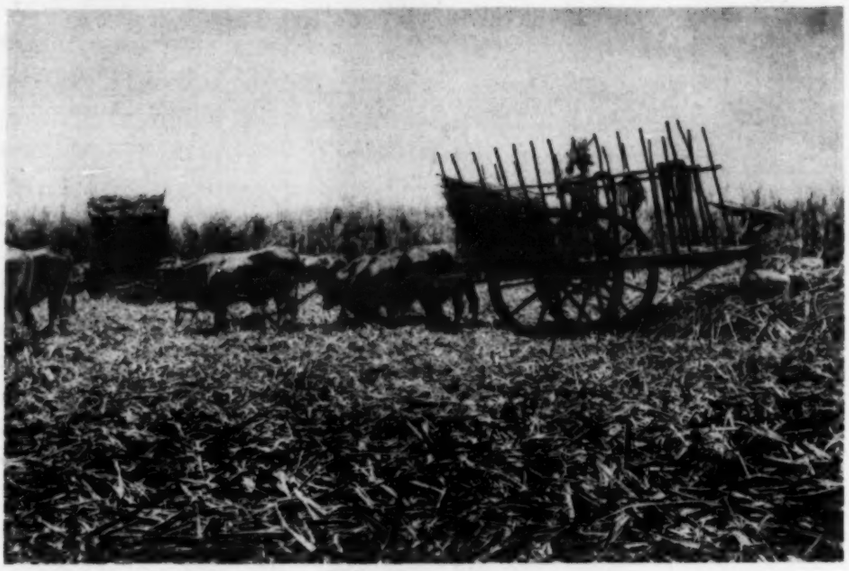

FIGURE 3.—Hauling sugarcane out of the fields with a cart usually requires eight oxen.

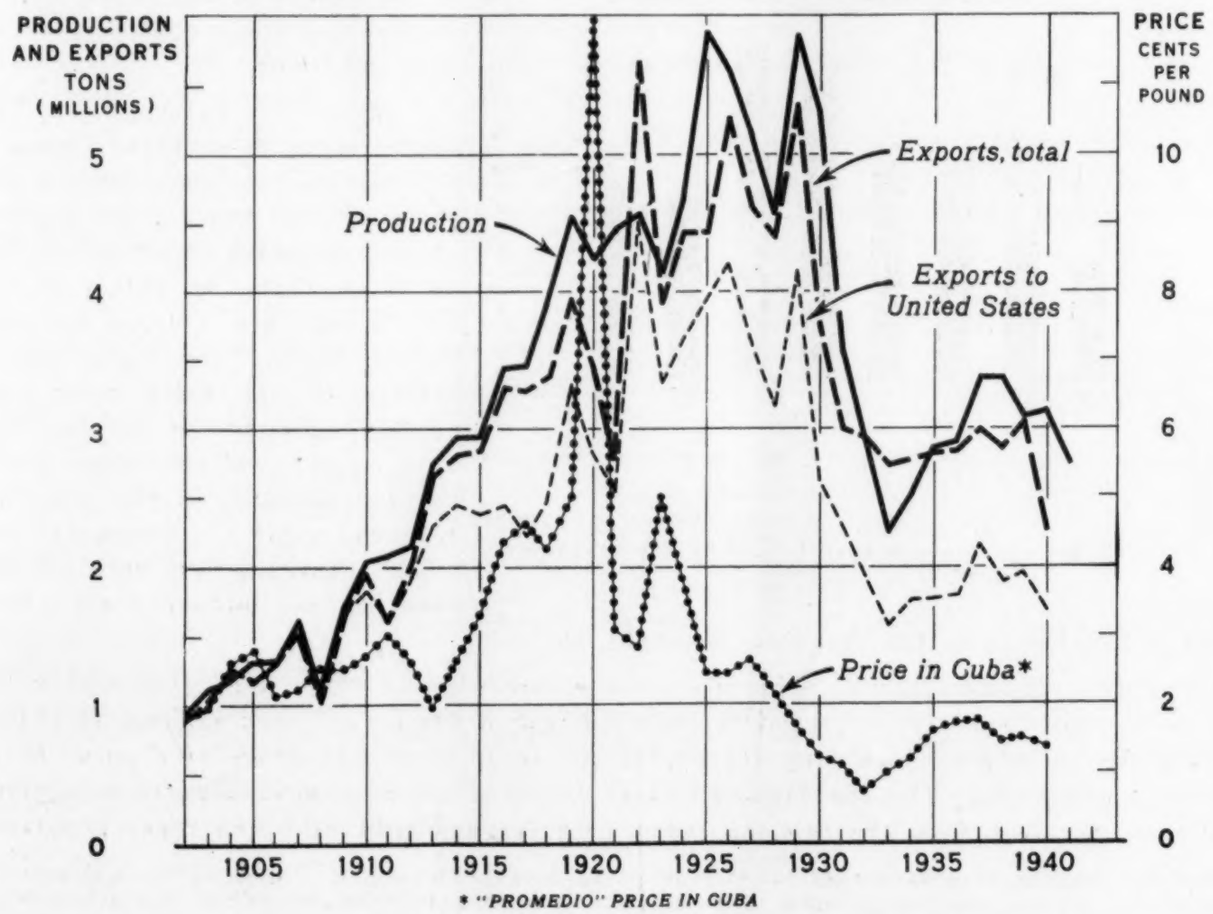

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FIGURE 4.—Sugar production, exports, and prices, 1902-40.

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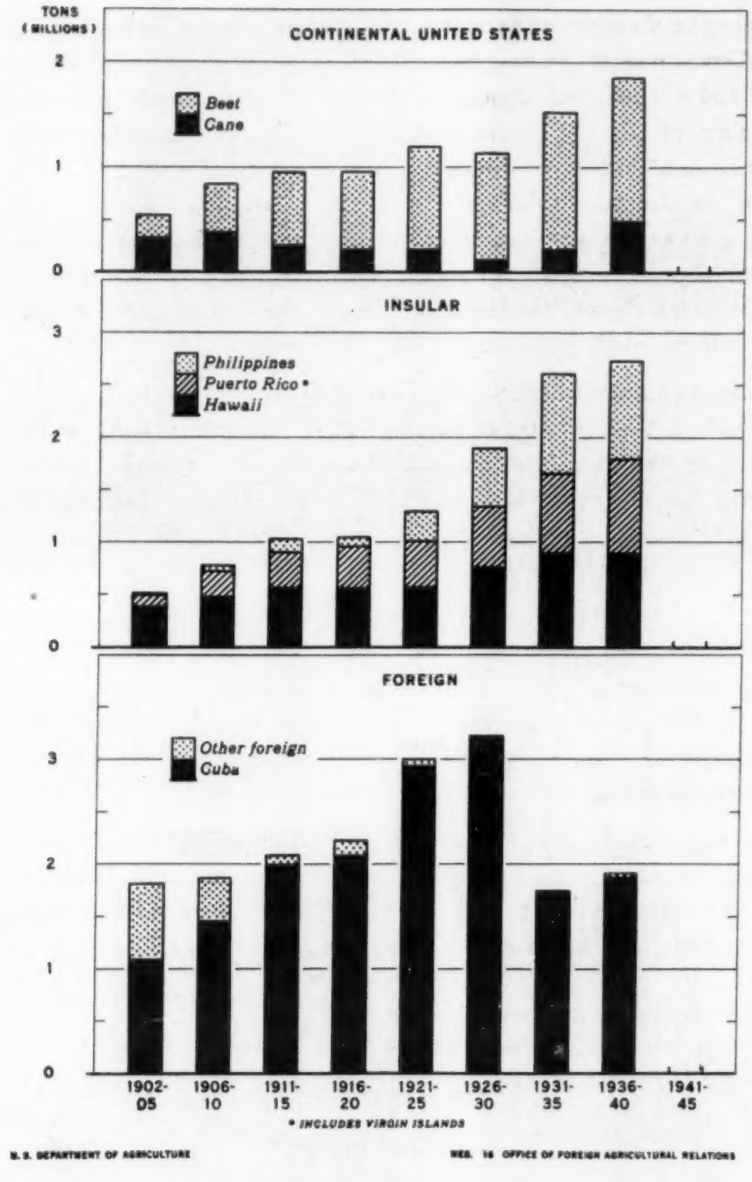

FIGURE 5.—Sugar consumption in the United States, by sources, 1902-40.

The highest yields are obtained from plant cane, that is, the first crop after planting, and the yields from the subsequent ratoon crops steadily decline. Higher yields, therefore, could be obtained by replanting each year, as is done in Hawaii; but with low sugar prices in Cuba it is necessary to keep production costs as low as possible. Practically no commercial fertilizer or irrigation is applied to cane in Cuba. Yields in the past 10 years have averaged 17.2 short tons of cane, or about 4,210 pounds of raw sugar, per acre. This sugar yield is higher than the average obtained from cane in the United States or the Philippines, but lower than in Puerto Rico and Hawaii.

About 95 percent of all Cuba's sugar is exported, domestic consumption being limited to about 200,000 tons. Two-thirds of the quantity exported and 70 to 85 percent, by value, prior to the war was shipped to the United States, the higher percentage of the value being due to the higher prices received on this market and the larger percentage shipped in the form of refined sugar. Shipments to other countries have been almost entirely to Europe, where the United Kingdom is by far the most important buyer.

Prices of raw sugar in Cuba rose to a record high in 1920, averaging nearly 12 cents a pound that year. They declined to a record low of 0.7 cent a pound in 1932. Following the sharp price drop after 1920 and again when the volume of exports fell sharply after 1929, the overexpanded sugar industry suffered severely and struggled to readjust itself to the new situation. In its struggle with the sugar problem-

Cuba has experimented with restricted production, delayed production, and market quotas; it has had pools and cartels, single sellers and a near valorization scheme; it has acted unilaterally and has sought international cooperation; and it has experienced spasms of complete laissez faire.[10]

[10] See p. 240 of the reference cited in footnote 4.

Probably the most important single factor affecting the Cuban sugar industry is the action of the United States Government through such measures as tariffs and quotas. From about 1910 until 1930 Cuba supplied about half of all the sugar consumed in the United States. The higher tariff in 1930 placed Cuba at a great disadvantage compared with United States domestic and insular areas, with the result that Cuba's participation in the United States market dropped to about 28 percent. Since June 1934 the United States has applied quotas to all sugar consumed in the United States, including domestic, insular, and foreign. Under the quota system Cuba's share during recent years has varied from 25 to 32 percent, while that from domestic and insular areas has increased compared with the period prior to 1930 (fig. 5).

In a second supplementary trade agreement with Cuba, effective January 5, 1942, the duty on Cuban sugar into the United States was reduced from 90 cents to 75 cents per 100 pounds of raw sugar. As a war measure the United States also agreed to purchase Cuba's entire 1942 sugar crop at a price of $2.65, f.o.b. Cuba. During the World War the United States also purchased the entire crops of 1918 and 1919.

Tobacco

Havana cigar tobacco is noted throughout the world for its fine quality. Its highly prized aroma makes it especially desirable for cigars and for blending with other leaf in the manufacture of cigars. It is for the latter purpose that most of the Cuban leaf is used in the United States.

Tobacco is Cuba's second most important industry. Of the approximately 50 million pounds annually produced during recent years, from 55 to 60 percent has been exported, about 27 million pounds in the form of leaf and nearly 1 million pounds in the form of cigars. (See table 5.) Exports during recent years have averaged about 14

TABLE 5.–*Tobacco production and exports, Cuba, 1911-40*

PERIOD	QUANTITY					VALUE		
	TOTAL PRODUCTION	EXPORTED UNMANUFACTURED	USED BY DOMESTIC MANUFACTURERS			UNMANUFACTURED EXPORTS	CIGARS EXPORTS	TOTAL EXPORTS, INCLUDING CIGARETTES AND CUT TOBACCO
			FOR EXPORT CIGARS	FOR LOCAL CONSUMPTION	TOTAL			
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Average:								
1911-15	65,398	36,310	4,709	18,990	23,699	17,951	11,207	29,538
1916-20	66,073	31,916	4,233	25,858	30,091	23,556	13,251	37,718
1921-25	60,223	31,473	2,519	25,152	27,671	26,807	9,905	37,139
1926-30	74,503	46,639	2,321	24,982	27,303	26,548	9,983	36,985
1931-35	48,541	33,065	1,128	14,436	15,564	11,737	3,957	15,873
1936-40	50,842	26,716	743	20,087	20,830	10,628	3,000	13,706
Annual:								
1936	42,139	23,053	1,034	17,636	18,670	9,153	4,068	13,331
1937	55,396	27,383	830	20,216	21,046	11,211	3,638	14,924
1938	55,319	28,011	780	20,452	21,232	10,839	3,127	14,044
1939	45,138	28,763	686	20,162	20,848	11,057	2,972	14,094
1940	56,219	26,364	383	21,971	22,354	10,880	1,193	12,139

Comisión Nacional de Propaganda y Defensa del Tabaco Habano.

million dollars in value annually, or about 10 percent of Cuba's total exports. The United States has been the principal market, taking about 75 percent, by value.

Since the turn of the century production has varied widely from 35 million to 83 million pounds, depending largely upon the demand in the export market. The depressions of 1907, 1921, and 1931 and also the World War of 1914 decreased foreign purchasing power, reduced exports, and made necessary a reduction in the crop (fig. 6). The long-time trend indicates some decline in production from a level of about 60 million pounds in 1901-14 to an average of about 50 million pounds in 1930-40.

Five separate types of tobacco from five different growing regions are recognized by the trade. From west to east, they are, namely, Vuelta Abajo, Semi-Vuelta, Partido, Remedios, and Oriente. The five principal regions are subdivided into districts, in each of which the tobacco has more or less uniform characteristics. Vuelta and Remedios are by far the most important and most widely known, accounting for fully three-fourths of the total production (table 6). It is estimated that Cuba produces about 2 million pounds of shade-grown leaf, much of which is used for cigar wrappers. About three-fourths of this is grown in the Partido region and one-fourth in Vuelta Abajo.

Vuelta Abajo, accounting for about 40 percent of the total production, is grown on the sandy soils in the extreme western part of the island and is generally the finest tobacco in the country. The leaf is aromatic yet mild, has a bright brown color, and is used principally in the manufacture of cigars in Cuba. Leaf produced in the small Semi-Vuelta region, which adjoins on the east, has a heavier body and stronger aroma. The Partido region of rich, red soil southwest of Habana produces a large, light, slate- or sand-colored leaf with fine texture. It is grown under cloth shade and is used for wrappers on clear Havana cigars manufactured for the English market. Production declined sharply before the World War.

TABLE 6.—*Tobacco production in Cuba, by regions or types, average 1936-40*

REGION	NUMBER OF FARMS	ACREAGE	YIELD PER ACRE	TOTAL PRODUCTION
	Number	*Acres*	*Pounds*	*1,000 pounds*
Vuelta Abajo	1,937	42,663	486	20,733
Semi-Vuelta	499	5,931	397	2,353
Partido	406	2,206	633	1,396
Remedios	2,092	54,717	451	24,695
Oriente	279	1,768	942	1,665
Total	5,213	107,285	474	50,842

1911-28, Association of Tobacco Merchants and Growers; 1929-40 Comisión Nacional de Propaganda y Defensa del Tabaco Habana.

The Remedios region in central Cuba produces about one-half of the total crop and is particularly important for export to the United States. This leaf has a heavy gummy texture and a strong aroma and therefore is most suitable for blending as filler with other leaf in machine-made cigars in the United States. The small Oriente region consists of two widely separated districts in the eastern end of the island. This leaf is generally of inferior quality, with coarse texture and strong aroma, and is used primarily in the cheaper grade of domestic cigarettes.

Only about one-third of Cuba's tobacco production is normally used in the manufacture of cigars and cigarettes for local consumption. In spite of the country's

important production of fine tobaccos, the per capita consumption of commercially manufactured products is relatively low.[11] Cigarettes are by far the most important product in domestic consumption, accounting for about 85 percent as compared with only 14 percent for cigars and less than 1 percent for smoking tobacco.

TABLE 7.–*Tobacco used in manufactured products in Cuba, average 1936-40*

PRODUCT	DOMESTICALLY CONSUMED	EXPORTED	TOTAL
	Million pounds	*Million pounds*	*Million pounds*
Cigars	2.80	0.90	3.70
Cigarettes	17.12	.08	17.20
Smoking tobacco	.13	.03	.16
Total	20.05	1.01	21.06

Nearly two-thirds of the crop is normally exported as unmanufactured cigar filler; roughly, 60 percent (during recent years) consisted of whole leaf and 40 percent of strips and trimmings. Exports of wrapper leaf are small, amounting to only 0.2 to 0.5 million pounds annually. The United States has long been the best market, taking about one-half of the quantity and three-fourths of the value of exports of unmanufactured tobacco. Most of the remainder was sent to Europe, where Spain was the most important importer. The Spanish civil war severely reduced shipments to that country several years ago, and subsequently the European war cut off markets in most of the other European countries. Early in 1940 the United Kingdom prohibited purchases of cigars from Cuba, thus closing the most important export market for cigars, of which from 3 to 5 million dollars annually had been exported.

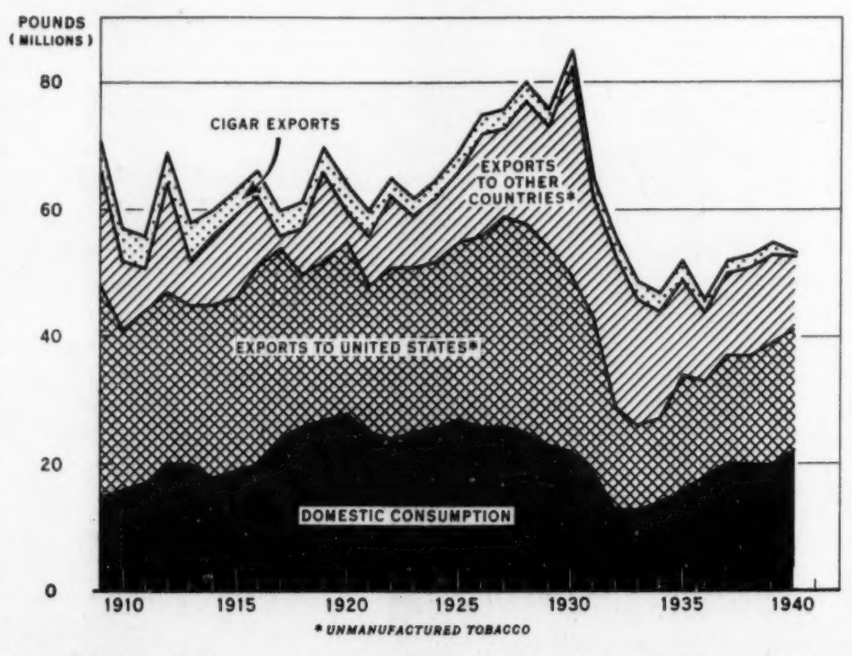

FIGURE 6.–Tobacco, consumption and exports, 1909-1940.

It is problematical to what extent the export outlets temporarily lost may be regained after the close of the war. Furthermore, in many countries the consumption of cigars has declined over a period of years, and it is probable that the world demand for cigar leaf will be not greatly increased. An additional adverse factor is the tendency toward the use of cheaper products, whereas Cuban leaf is relatively high priced and Cuban cigars frequently retail at several times the prices charged for domestic cigars. However, the high quality and fine aroma of Cuban tobacco and the inability to obtain a similar leaf from any other country assures a consumer preference for Cuban tobacco among most cigar smokers.

[11] The total leaf used in manufactured products for local consumption is estimated at 4.5 pounds per capita, or less than two-thirds as much as in the United States. However, some is used direct by growers and their families without entering commercial manufacture.

Fruit

Fruit ranks third in importance in agricultural exports, after sugar and tobacco. During the past decade exports averaged more than 3 million dollars in value annually, of which roughly 95 percent were shipped to the United States. Most important for export are bananas, pineapples, grapefruit, and avocados with small quantities of limes, fresh papaya, and guava preserves. Numerous other kinds of tropical fruits are grown but not for export. None of the usual Temperate Zone fruits, such as apples, pears, peaches, plums, and grapes, are grown commercially in Cuba. The following tabulation shows the average exports of fruit during the 5 years 1936-40:

	1,000 pounds	*1,000 pounds*
Bananas	251,543	2,054
Pineapples:		
Fresh	91,851	789
Canned and juice	9,050	407
Grapefruit	11,765	165
Avocados	10,155	113
Guava products	1,522	70
Plantains	1,356	10
Papayas	440	7
Limes	188	4
Other fruits	926	29
Total	378,796	3,648

FIGURE 7.—Bananas are important for export and domestic consumption.

Bananas are the most important fruit; not only are they the leading fruit export but large quantities are consumed throughout the island. Those for export are grown almost entirely in the mountain valleys in the extreme eastern end of the island; but other varities, much smaller and less adapted for shipment, are grown in all parts of the island for local consumption. In addition large quantities of the extra large banana, or plantain, are used exclusively for cooking to replace bread and vegetables.

Cuba's banana exports, although large, are not as great as those of several other Caribbean countries. Practically all of Cuba's exports, varying from 4 to 9 million bunches annually, are to the United States, where Cuba usually supplies less than 10 percent of the total imports. The possibilities for the future expansion of the export banana industry appear to depend largely on the adoption of methods for the control of the sigatoka disease, which has already become an important factor in other banana-producing countries and now threatens in Cuba.

Pineapples are the second most important export fruit, with shipments of fresh, canned, and preserved pineapples and juice amounting to well over a million dollars annually. About 15,000 acres, cultivated by 643 growers, were under commercial production in 1939. Production for export is centered in regions southwest of Habana and is in the hands of a relatively few large growers. Some pineapples are harvested each month, but the main crop, providing about 85 percent of the total exports, is harvested from April to June. Cuba usually supplies about one-half of the total United States requirements of fresh pineapples, the remainder coming largely from Puerto Rico and Mexico. Production in the United States accounts for only about 1 percent of the total.

FIGURE 8.—A field of pineapples, Cuba's second most important export fruit.

Citrus fruits, such as oranges, grapefruit, and limes, are grown in most parts of Cuba and are used extensively for domestic consumption. The only exports are of grapefruit, principally from the Isle of Pines, and some limes. Production in the Isle of Pines has declined during the past 15 years, as a result of increased plantings in the United States, and now amounts to only about 1,000 acres of commercial orchards. The main harvest season for export is from August to October, but for domestic consumption continues to April or May. Shipments to the United States are principally during the months of August to October, when production in the United States is seasonally low. From 50,000 to 150,000 boxes of Cuban grapefruit are imported annually into the United States, and these constitute less than 1 percent of total United States consumption.

FIGURE 9.—Papaya grow on small trees but are similar to melons.

Avocados grow well in Cuba and are extensively used. Exports, varying from 8 to 12 million pounds annually, are limited, under agreement with the United States, to the 4 months June to September, when production in the United States is lowest. Imports from Cuba during these months supply 40 percent of the total yearly requirements in the United States.

Other tropical fruit of many kinds are grown for domestic consumption. Most of these are practically unknown in the United States, are sweet, have a low acid content, and are well adapted for shipment. Only very small quantities of fresh papaya and guava preserves are exported. Papaya is a large melonlike fruit, which grows on a small tree and is commonly used like cantaloupes. Guava is a small fruit produced on a wild bush and is used principally for making jellies and preserves. Mangoes are among the most common tree fruits in Cuba. The fruit is about the size and shape of a peach, but somewhat more flattened and pear-shaped with a yellow-red color. The flesh is sweet, juicy, and slightly fibrous and clings to the large central seed. Other common fruits are the mamey colorado, caimito, zapote or sapodilla, anón, cherimoya, guanábana, and tamarind.

Winter Vegetables

The production of winter vegetables for the United States market is an important industry in certain sections of Cuba and provides an income for many small farmers. The total value of exports is usually a little over a million dollars a year, and winter vegetables thus rank fourth among Cuba's export crops. Most of the capital invested in the production and marketing, as well as the seed, fertilizers, and packing materials, are supplied by American interests. The following shows the average value per year of the various kinds of Cuban vegetables imported into the United States in 1936-40:

	1,000 dollars
Tomatoes	826
Lima beans	124
Eggplant	123
Peppers	81
Okra	72
Cucumbers	56
Potatoes	43
Others	16
Total	1,341

Most of these vegetables require special soils, in addition to facilities for packing and convenient transportation. Consequently, production is limited to certain areas, most of which are near Habana, although some vegetables are produced on the sandy soils of the Isle of Pines and during recent years the main crop of tomatoes has been produced on the heavier soils in the central part of Cuba.

Imports of Cuban fresh vegetables to the United States are highly seasonal and limited to the winter and early spring months when field production is not possible in most of the United States. Florida and Texas are practically the only areas that produce the kinds of early winter vegetables imported from Cuba, and shipments even from these States are heaviest during the months when Cuban shipments are relatively low. Only the southernmost counties of Florida and Texas have about the same shipping season as Cuba. Furthermore, imports from Cuba are only for consumption as fresh vegetables, whereas much of the domestic crop in the United States is for canning. Although the Cuban vegetable industry, to some extent, is competitive with production in southern United States it is primarily of a supplementary nature, assuring supplies during periods of low production in the United States, and also provides a reserve in case of severe crop damage due to frost, wind, rain, etc.

Coffee

Cuba does not rank among the great coffee-producing countries of the world, but it does produce about 60 million pounds a year, which is slightly more than the requirements for domestic consumption. Exports during recent years have varied from 5 to 19 million pounds, with an average value of about three-fourths of a million dollars annually. Although the industry has expanded during the past 15 years, it is by no means new to Cuba. Coffee has been produced and exported for nearly 200 years, but the rapid expansion of production in other countries and of the sugar industry in Cuba resulted in the neglect of the crop and necessitated sizable imports 10 to 15 years ago. In order to revive the industry the Cuban Government in 1927 raised import duties, fixed minimum prices, and made exports compulsory.

Production in Cuba is essentially a mountain industry, since the best quality coffee is obtained at altitudes of 1,000 to 1,500 feet in the eastern mountain regions and near Cienfuegos. In 1937 there were about 8,000 growers with approximately 150,000 acres in coffee. From one-half to three-fourths of Cuba's exports are usually shipped to the United States, but these constitute less than 1 percent of the total United States requirements.

Cacao

Cacao, from which cocoa and chocolate are made, is similar to coffee in that it is grown on small trees in mountainous areas and requires considerable work in preparation on the farm after harvesting. Cacao is now of relatively minor importance in Cuba, cultivation having greatly declined since the World War because of increased production abroad and the shift in Cuba to sugar. Production 10 years ago amounted to 8 million pounds of dry cacao beans, but during the past few years it has declined to less than 1 million pounds, about 90 percent of which is consumed by local manufacturers. Exports vary from none to 2 million pounds, but none has been shipped to the United States since 1937.

Fiber Crops

Cuba's principal fiber crop is henequen. The climate is not ideally adapted for cotton or manila hemp. A cotton-textile industry has been developed during the past 10 years and now requires about 14,000 bales of imported cotton, obtained almost entirely from the United States. A few farms in Cuba grow short-staple cotton, and on the Isle of Pines some long-staple or Sea Island cotton has been grown experimentally, but neither is of commercial importance. Henequen production in Cuba has expanded since the first World War, and recent exports have been valued in excess of a million dollars annually, most of which consist of the raw fiber, although some manufactured twine, rope, and cordage are also exported.

Food Crops for Domestic Consumption

Climatic conditions in Cuba prevent the commercial production of the cereal grains commonly grown in the United States, such as wheat, rye, barley, and oats. Cuba does grow considerable corn and a little rice but relies on imports for more than 90 percent of the rice consumed, practically all of the wheat flour, and about one-third of the beans, in addition to about 3 million pounds of other grain, chiefly oats for feed for army horses and barley for brewing.

Root crops and plantains supply the major portion of the country's requirements of domestically grown starchy foods. The following shows the estimated quantities of each of the principal grains, beans, and starchy crops used for food: [12]

	Consumption *Million pounds*	*Imported* *Million pounds*
Grains and beans:		
Rice	485	440
Corn meal	260	1
Wheat flour[13]	210	210
Beans and peas	150	55
Root crops and plantains:		
Plantains[14]	575	0
Potatoes	150	45
Sweetpotatoes and yams	400	0
Yuca	360	0
Malanga	300	0

Corn is widely grown in Cuba, and the major portion is used for food. Yields are low, estimated at possibly 15 bushels an acre, and the total production is estimated at about 5 million bushels. On the whole, production is sufficient to meet present requirements, with exports slightly exceeding imports.

Rice is the most important grain consumed in Cuba, its consumption being considerably greater than that of corn meal and wheat flour combined. Requirements during recent years have varied from 450 to 500 million pounds, amounting to about 110 pounds per capita as compared with only 6 pounds per capita in the United States. During recent years domestic production has amounted to only 30 to 50 million pounds of cleaned rice, mostly produced by primitive methods involving a great deal of hand

[12] VIVO, HUGO. LOS NUMEROS INDICES EN CUBA. Cuba Sec. de Agr., 43 pp. 1938.

[13] Average imports 1936-40.

[14] Bananas for cooking, assuming an average weight of two-thirds pound each.

labor, but there is now considerable interest on the part of the Cuban Government in stimulating increased production. Over 90 percent of the requirements have been imported. Prior to 1937, these were obtained almost entirely from the Far East, but during the past several years the United States has become the principal supplier, largely because of the war and the difficulties of transportation from the Far East.

Beans are also a very important item in the Cuban diet, especially for the poorer people. Total production, including chickpeas (garbanzos), is estimated at 150 million pounds a year. Nearly half of this consists of black beans, about one-fourth or red and pink kidney beans, and the remainder of white beans and chickpeas, in addition to about 6 million pounds of imported dry peas. Of total requirements about one-third is imported from Chile, Mexico, and the United States and about two-thirds - mostly black beans - is grown in Cuba.

Potatoes are not very important in Cuba. Although some early potatoes are exported to the United States, Cuba usually imports about 45 million pounds of white potatoes for food and roughly 25 million pounds more for seed. Total production is estimated at near 100 million pounds, or about two-thirds of the country's requirements. Sweetpotatoes are far more important in Cuba than common potatoes.

Yuca, or cassava, roots are widely used both for cooking as food like potatoes, and for the manufacture of tapioca starch. The roots are generally similar to large, long potatoes. Total starch production is estimated at about 5 million pounds annually. Some starch has been exported to the United States during recent years, and in 1940 exports increased to nearly 1 million pounds, with a value of about $25,000. It is possible that with improved varieties and improved methods of manufacture the production of starch for export may profitably be expanded.

Vegetable-oil production in Cuba has been expanding during recent years but is still far short of domestic requirements. From 1927 to 1933 the production of oil from sunflower seeds expanded to 5.5 million pounds. It has since been replaced by peanut oil, the production of which in 1940 is estimated at 16 million pounds with a value well in excess of a million dollars.

LIVESTOCK PRODUCTION

Cuba's climate permits pasturing the year round, thus providing a cheap feed, particularly for cattle. Very little grain of any kind is fed to livestock. Until 1940 the entire livestock industry was on an import basis, except for exports of 1 to 2 million dollars' worth of cattle hides and a few live cattle. During the past 10 years, however, the industry has made remarkable progress. By 1940 beef and dairy products were on a net-export basis, but pork and lard are still imported. The following shows the number of head of the various kinds of livestock in Cuba in 1940 according to preliminary census information:

	Thousands
Cattle	5,000
Hogs	857
Sheep	141
Horses	391
Mules and donkeys	38

Practically all the field draft work and the farm hauling is done by oxen. The sugar industry particularly depends upon oxen to move the entire cane crop from

the fields to the railways or mills. For this work six to eight oxen are usually hitched to a large, heavy two-wheeled cart. Feed consists solely of pasture and cane tops and leaves left in the field after harvesting the cane. Horses, as a rule, are used only for riding and as such provide the principal means of human transportation in rural areas where farmers cannot afford expensive automobiles and where soft earth roads would restrict their use. Horses, mules, and donkeys are extensively used for pack work in carrying farm produce to market.

At least three-fourths of Cuba's total meat requirements, other than poultry, are supplied by beef and veal and about one-fourth by pork. Mutton production is unimportant.

Cattle

Large sections of relatively poor land in the east-central part of Cuba are suitable only for grazing. Here are located many large cattle ranches similar to those in western United States, relying solely on pasture for feed. Most Cuban cattle are crosses between native breeds and the Zebu or Brahman from India. They are well adapted to the climate and range conditions but not for intensive feeding. The meat is lean - not marbled - and is comparable to the Utility grade on the United States market. Official statistics indicate that between 450,000 and 500,000 cattle are slaughtered annually in officially inspected packing plants, but a considerable number in addition are probably used on farms and in local communities. The total slaughter may be near 750,000 head.

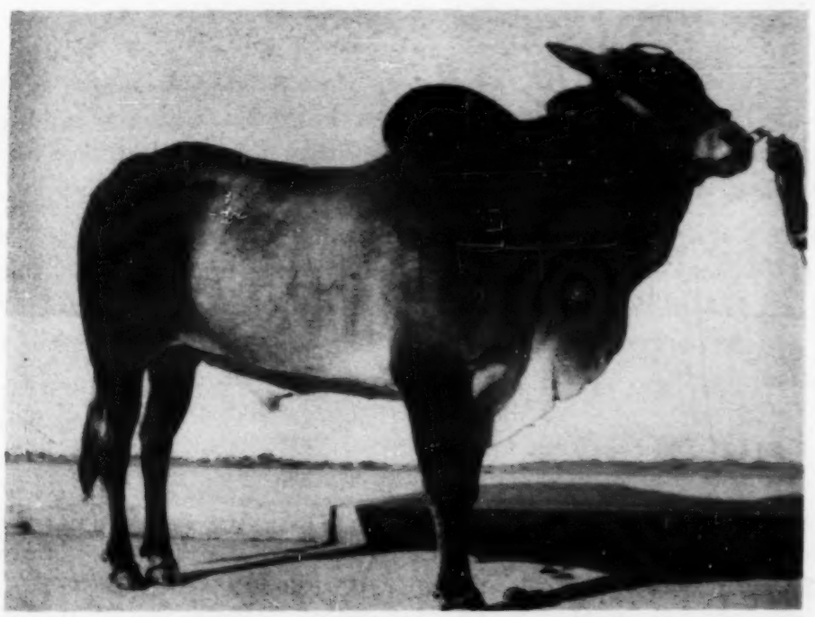

FIGURE 10.—Zebu or Brahman. These have been commonly crossed with native cattle.

Prior to 1930 Cuba imported large quantities of jerked beef from Argentina and Uruguay, but since then domestic production has replaced these imports and by 1940 Cuba was exporting more than 12 million pounds of chilled beef (table 8). Exports increased to more than 30 million pounds in 1941 and may increase further; but under the present extensive methods it is doubtful whether Cuba will be able to produce regularly more than 100,000 head of cattle for export purposes. Shipments from Cuba in 1941 accounted for about 7 percent of the total United States imports of beef and veal (including live and dressed) but only about 0.3 percent of the total consumption.

TABLE 8.—*Imports and exports of meat and lard, Cuba, 1921-40*

PERIOD	IMPORTS					EXPORTS	
	BEEF[1]	PORK		TOTAL MEAT[3]	LARD	MEAT[4]	CATTLE LIVE
		FRESH	SALTED AND CURED[2]				
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*Number*
Average:							
1921-25	45,906	1,941	47,402	102,992	94,594	0	1,252
1926-30	28,222	1,636	36,948	71,465	83,284	752	1,214
1931-35	839	72	11,602	12,648	25,004	105	1,111
Annual:							
1936	79	48	6,105	6,342	28,547	8	29
1937	81	44	5,086	5,342	41,131	267	43
1938	37	243	5,606	5,999	45,900	26	48
1939	58	(5)	4,499	4,648	53,469	492	1,415
1940	22	0	3,982	4,104	66,332	12,244	5,934

[1] Almost entirely jerked beef prior to 1932.
[2] Includes salt pork, bacon, and hams.
[3] Includes some canned and other meats.
[4] Almost entirely chilled beef.
[5] Less than 500 pounds.

Official foreign-trade statistics of Cuba.

Hogs

Cuba's semitropical climate is not well adapted to hog production, and if grain is fed the cost of producing pork is considerably higher than for beef from pasture. The native rangy criollo or chino type of hog, even when crossed with the Hampshire, is not well suited for lard production. Furthermore, there is only a small domestic market for pork compared with the large requirements of lard, about 60 percent of which is imported. Although pork production has increased in recent years and imports have declined to little more than one-tenth those of 20 years ago, it is not likely that Cuba will ever find it profitable to produce enough hogs to supply its total requirements of lard.

Dairying

Dairying on a commercial scale is a comparatively recent development in Cuba. Although the consumption of dairy products is relatively small, particularly of fresh milk, the industry has developed rapidly during the past 15 years. Formerly imports amounted to 40 or 50 million pounds of condensed and evaporated milk, 5 million pounds of cheese, and 2.5 million pounds of butter, costing altogether about 6 million dollars annually, but by 1940 all these products were on an export basis.

Nevertheless, dairying in Cuba is still of an extensive type and for the most part consists of milking cows of the regular beef herds. Some dairy breeds have been imported, but by far the greater part of the milk is obtained from the native-Zebu cross. No hay, grain, or concentrate feed is fed except in a few dairies supplying fresh milk to the cities. According to the 1940 census there were 1,636,000 cows in Cuba, nearly half of which were milked at least part of the year. Production per cow is very low, and most of the milk is processed into evaporated and condensed milk. In the warm, moist climate and in the absence of adequate refrigeration facilities, these products can be transported, stored, and used with much greater ease and safety than fresh milk.

Butter production also increased sharply under tariff protection; but, because of the low purchasing power of the people, domestic consumption is very small - estimated at only about 1 pound per capita as compared with 17 pounds in the United States. At this level and with an estimated total production of 6 million pounds annually, Cuba is now able to export about one-fifth of the production. Cheese production is estimated at about 3 million pounds and is increasing. Exports in 1940 exceeded imports.

TABLE 9.—*Cuban imports and exports of dairy products, 1921-40*

PERIOD	MILK PRESERVED[1]		BUTTER[2]		CHEESE	
	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Average:						
1921-25	45,399	0	2,199	0	4,928	4
1926-30	41,770	0	1,416	12	4,244	6
1931-35	7,861	0	63	81	616	5
Annual:						
1936	5,335	1	25	652	365	23
1937	4,550	3	18	954	479	23
1938	5,997	77	28	223	578	12
1939	1,261	17	10	523	291	26
1940	600	4,090	9	1,287	121	293

[1] Including evaporated, condensed, and a little powdered milk.

[2] Including a little margarine.

Official Cuban foreign-trade statistics.

Poultry

Poultry production is extensive but consists of many small flocks receiving very little special attention or feed. The climate is well adapted for poultry, but there are practically no large commercial flocks and there is now very little foreign trade in poultry or eggs. The price of eggs is low, and the cost of grain feed is high. The Cubalaya breed with three varieties - white, black, and black-breasted red - is about the size of the Leghorn and has recently been recognized as one of the world's standard breeds. The sale of eggs is an important steady source of a small amount of ready cash for farm families, and the game birds play an important role in supplying amusement in rural areas.

FOREIGN TRADE

Foreign trade plays an exceptionally important role in Cuba's economic life. The dependence on foreign trade dates back to colonial days when, as a Spanish colony, the island was an important source of raw material to Spain. At the same time, obstacles were placed in the way of the island's economic development in order to make it heavily dependent on imports from Spain.

Cuba's exports are almost entirely agricultural whereas the imports are only about one-fourth agricultural. Sugar products, such as raw and refined sugar, sirups,

TABLE 10.–*Exports from Cuba of principal agricultural products for specified years*

PRODUCT	QUANTITY					VALUE				
	1929	1932	1938	1939	1940	1929	1932	1938	1939	1940
	Million pounds	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Sugar	11,089.8	5,862.7	5,822.4	6,138.3	4,616.6	204,849	53,973	99,771	105,850	79,302
Sugar products	.....	.....	.....	.....	.....	11,674	3,771	12,613	11,236	16,312
Tobacco:										
Unmanufactured	46.7	36.9	28.0	28.8	26.4	27,247	10,381	10,478	11,057	10,880
Manufactured[1]	2.4	0.9	0.9	0.8	0.5	10,678	2,545	3,062	3,033	1,261
Fruit	307.9	291.6	305.8	344.6	323.0	3,523	2,835	3,070	3,534	3,358
Vegetables	73.3	46.2	67.9	54.6	88.0	1,398	871	1,067	733	1,302
Henequen[2]	8.8	11.2	24.1	26.2	34.1	624	417	1,044	942	1,574
Coffee	(3)	13.4	15.0	18.8	14.9	1	1,206	677	856	626
Honey	9.9	11.5	14.4	12.3	4.1	646	331	677	600	215
Meat	1.6	0.2	(3)	0.5	12.2	164	7	2	28	725
Hides, skins	15.0	8.5	16.8	11.8	11.8	2,088	427	1,570	1,050	1,027
Total above items	.....	.....	.....	.....	.....	262,892	76,764	134,031	138,919	116,582
Others[4]	.....	.....	.....	.....	.....	9,548	3,908	8,647	8,757	10,706
Total exports	.....	.....	.....	.....	.....	272,440	80,672	142,678	147,676	127,288
To United States	.....	.....	.....	.....	.....	208,759	60,871	108,362	111,182	104,905

[1] Estimated weight of leaf used in manufacture of cigars for export.
[2] Includes henequen and sisal fiber and cordage.
[3] Less than 50,000 pounds.
[4] Includes possibly 1 million dollars' worth of other agricultural items not listed above.

Com. Exterior, Cuba Min. de Hacienda, Dir. Gen. de Estadís.

TABLE 11.–*Imports into Cuba of principal agricultural products for specified years*

PRODUCT	QUANTITY					VALUE				
	1929	1932	1938	1939	1940	1929	1932	1938	1939	1940
	Million pounds	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Rice	458.9	314.5	411.7	444.1	429.2	14,743	5,354	8,863	9,184	9,911
Wheat flour	251.5	168.8	205.1	211.9	219.9	8,766	3,115	5,505	3,921	4,640
Grain	80.7	11.4	3.4	3.6	2.5	1,490	114	66	51	34
Beans, peas	101.1	36.5	53.1	49.0	48.3	5,793	894	1,604	1,865	1,867
Onions, garlic	48.1	22.7	29.0	30.9	28.4	1,448	317	674	599	765
Potatoes	210.1	58.4	87.4	61.8	29.2	3,591	567	916	887	262
Fruits, fresh	10.7	5.1	11.6	9.6	12.4	622	161	489	402	510
Vegetable oil	17.6	22.8	43.1	42.1	38.6	4,409	3,016	2,938	2,434	1,875
Cotton, raw	0.1	0.4	5.0	7.0	6.7	15	23	457	722	600
Pork	40.1	12.9	5.8	4.5	4.0	5,604	850	880	681	656
Beef	20.1	0.1	(1)	(1)	(1)	2,690	18	9	11	7
Milk, evaporated	47.4	11.4	5.7	0.9	0.5	4,529	731	355	53	31
Cheese	4.5	1.0	0.6	0.3	0.1	1,001	117	97	55	30
Butter	1.0	0.1	(1)	(1)	(1)	431	13	6	3	2
Lard	83.2	21.9	45.9	53.5	66.3	9,705	1,166	3,970	3,486	3,703
Other fats	2.7	(1)	4.3	6.8	3.0	1,705	628	186	208	137
Leather	2.3	1.5	2.6	1.8	1.3	2,900	419	1,486	1,499	1,164
Total above items	.....	.....	.....	.....	.....	69,442	17,503	28,501	26,061	26,194
Others[2]	.....	.....	.....	.....	.....	146,773	33,521	77,506	79,801	77,666
Total imports	.....	.....	.....	.....	.....	216,215	51,024	106,007	105,862	103,860
From United States	.....	.....	.....	.....	.....	127,050	27,653	75,152	78,381	81,042

[1] Less than 50,000 pounds.
[2] Includes possibly 2 million dollars' worth of other agricultural items not listed above.

Com. Exterior, Cuba Min. de Hacienda, Dir. Gen. de Estadís.

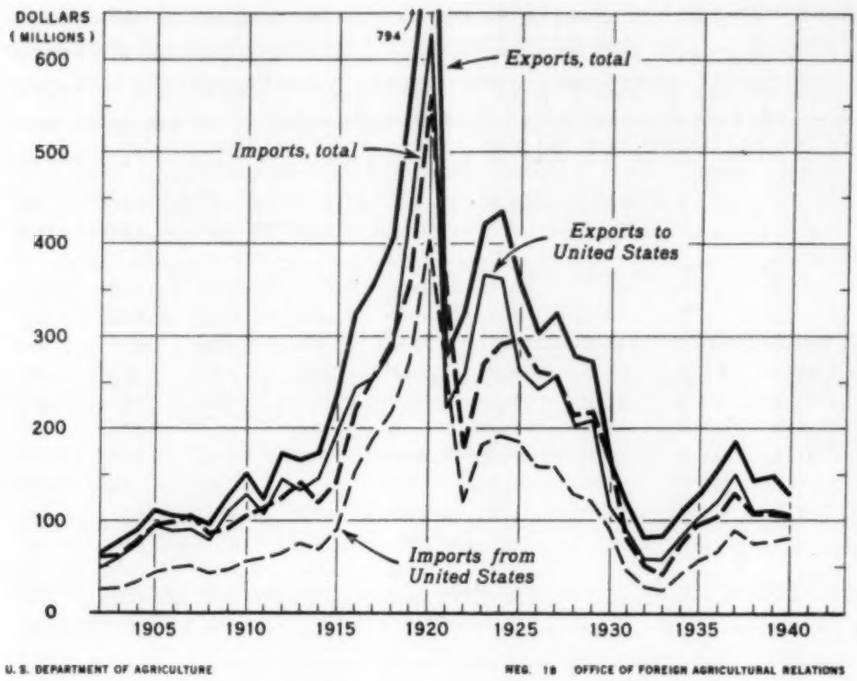

FIGURE 11.—Foreign trade and trade with the United States, 1902-40.

molasses, and distilled products, accounted for about 80 percent of the total exports during the period 1936-40. Tobacco, including cigars, accounted for nearly 10 percent of the total. Only about 6 percent of the total exports during this period were nonagricultural products, and these consisted principally of minerals, forest products, and sponges (table 10).

Imports are predominantly manufactured goods, but include about 30 million dollars worth of agricultural products, most important of which, in terms of value, are rice, wheat flour, lard, vegetable oils, beans and peas, potatoes, onions, fruit, and cotton (table 11).

The United States is by far the most important country in Cuba's foreign trade, supplying more than two-thirds of Cuba's total imports and taking three-fourths of total exports in 1936-38. In 1941 when trade with most of the European countries was cut off, the proportion of imports obtained from the United States rose to 87 percent. Of Cuba's exports, 84 percent were to the United States.

TABLE 12.—*Principal agricultural items in the trade between Cuba and the United States, average 1938-40*

ITEM	UNITED STATES EXPORTS TO CUBA		ITEM	UNITED STATES IMPORTS FROM CUBA	
	Million pounds	*Million pounds*		*Million pounds*	*Million pounds*
Agricultural:			Agricultural:		
Lard	56.7	3.9	Sugar	3,772.0	72.6
Pork	4.7	0.7	Molasses	[1] 186.0	8.4
Wheat flour	198.0	4.4	Tobacco, unmanufactured	14.0	8.3
Rice	234.4	6.6	Bananas	[2] 4.5	1.9
Beans and peas	23.0	0.8	Pineapples	-	1.7
Potatoes	39.6	0.5	Other fruits	16.8	0.3
Other vegetables	23.4	0.6	Tomatoes	46.5	0.9
Fruit	13.2	0.7	Other vegetables	20.1	0.5
Cotton, raw	6.2	0.7	Henequen and twine	21.0	1.0
Vegetable oils	14.0	0.8	Coffee	9.6	0.4
Other	-	2.1	Other	-	0.7
Total	-	21.8	Total	-	96.7
Nonagricultural	-	58.4	Nonagricultural	-	7.9
Total	-	80.2	Total	-	104.6

[1] Million gallons.

[2] Million bunches.

With no other country does the United States have as close economic relations as with Cuba, the only country with which the United States has a reciprocity treaty involving exclusive preferential tariff treatment. For nearly four decades the trade between these two countries has received special tariff treatment; each country accords lower tariff rates to the other than to any other country.[15] This exclusive preferential treatment of trade is the outstanding factor in the trade policy between the two countries and has been largely responsible for the close commercial relations and the fact that Cuba takes such a high proportion of its imports from the United States.

The value of Cuba's foreign trade has been fairly well maintained since the outbreak of hostilities in Europe in 1939. This has been possible principally because of the relatively small share - only about 19 percent in 1936-38 - of Cuba's trade with the European countries. The United States share and that of other American countries has increased and by 1941 fully compensated for the value of the trade loss in Europe. However, part of the increase is accounted for by higher prices rather than by quantity of goods; furthermore, certain industries lost more than others. The following tabulation shows the total value of all exports and imports in millions of dollars during the 12 months immediately preceding the war - September to August 1938-39 - and the two 12-month periods immediately following:

	Exports	*Imports*
1938-39	134	91
1939-40	148	111
1940-41	164	116

At first Cuba was able to continue exports to those European countries that were not cut off by the blockade. These amounted to 18 million dollars in 1940 as compared with about 30 million previously. Later in 1940, as more of these countries were cut off, the trade declined, affecting Cuba's market for sugar, tobacco, cigars, and henequen fiber.

Not until the spring of 1941 did the sharply increased demand for sugar and molasses in the United States result in a material increase in Cuba's exports. In 1941 Cuba exported roughly 3.5 million short tons of sugar as compared with 2.3 million tons during the same period in 1940. The price of sugar also rose sharply,[16] although not to the same extent as during the World War. The total value of all Cuba's exports during the first 10 months of 1941 was 57 percent higher than during the same periods in 1940 and 1939. Exports to the United States increased 61 percent during this period and accounted for 84 percent of all Cuban exports. Other

[15] In 1902 Cuba and the United States entered into a treaty of commercial reciprocity. On September 3, 1934, a trade agreement was negotiated which greatly extended the scope. This was modified by two supplementary agreements effective December 23, 1939, and January 5, 1942. The exclusive preferential treatment in these treaties and agreements is generally recognized as an exception to the most-favored-nation policy, which would otherwise make concessions applicable to all countries alike, except to those which discriminate against the United States.

[16] On August 12, 1941, the Office of Price Administration fixed the maximum price of raw sugar in the United States at $3.50 per 100 pounds. This was about 30 cents lower than the current price but from 50 to 70 cents above the average prices for 1939 and 1940, respectively. The $3.50 price is equivalent to about $2.15, f.o.b. Cuba, after allowing for a 90-cent duty (in effect then) and the sharply increased freight charge, amounting to 45 cents per 100 pounds in 1941. Some further increase in price is indicated by the United States purchase of the 1942 Cuban crop at $2.65, f.o.b. Habana.

products with increased exports were tobacco, beef, and minerals. Cuba's total imports during the first 10 months of 1941 increased 22 percent above the same period in 1940, and imports from the United States increased 39 percent.

AGRICULTURAL POLICY AND DEVELOPMENT

Cuba in fact has had no clear-cut agricultural policy until recent years. During the preceding century its agriculture, as in most colonial countries, was directed first to the production of cattle on an extensive ranch scale. Subsequently, coffee gained in importance only to be replaced by the rapidly expanding sugar industry, which since the turn of the century has dominated the entire economy of the country. The distressed conditions in the sugar industry during the past 10 or 15 years, however, forced Cuba to try to diversify its agriculture to develop other products, both for domestic use and for export.

Diversification is now the central point in Cuba's agricultural policy, together with other general measures to improve wages and to develop manufacturing enterprises. This policy has been implemented by Government aid and regulatory measures, such as higher tariffs, loans for equipment to growers and processors, and fixed prices. Cuba's interest in diversification is increasing, but it is possible that the recently improved demand for Cuban sugar as a result of the war may temporarily reduce the need and the interest in diversification.

Much progress has already been made during the past 15 years toward diversifying Cuba's agriculture and increasing the degree of its self-sufficiency. Products other than those of sugar and tobacco have increased from accounting for only 4 percent of Cuba's total exports in 1924-26 to about 16 percent in 1940. Similarly, agricultural imports declined in importance from constituting about one-third of the total in 1924-26 to only about one-fourth in 1940.

The most significant development has been in the livestock industry. Beef, evaporated milk, butter, and cheese, all of which were formerly on a heavy import basis, by 1940 had reached a net-export basis. About 12 million dollars were spent annually 15 to 20 years ago for imports of these products. Imports of pork, lard, and eggs have also been reduced from the former cost of 20 or 25 million dollars to only about 4.5 million in 1940.

Imports of such crops as beans, corn, oats, potatoes, and coffee have declined from a former import value of about 16 million dollars annually to net imports of only about 2 million in 1940. Two of these, coffee and corn, are now on a net-export basis. Domestic production of peanut oil has increased to a point of supplying possibly one-third of Cuba's total requirements of vegetable oil. Diversification has also taken place through increased production of fruit and vegetables for export. However, there has been little increase in the production of two of the most important crop products, rice and wheat flour.

On the whole Cuba is now on a net-export basis for sugar, tobacco, fruit, vegetables, henequen and sisal, coffee, beef, hides and skins, dairy products, and corn, and is self-sufficient in the production of eggs and cacao. The principal agricultural deficiencies are rice, wheat flour, lard, cured pork, beans, vegetable oils, cotton, onions, and garlic.

In considering the degree of self-sufficiency it must be pointed out that the volume of domestic consumption, particularly of the more expensive import items, changes considerably and that the degree of self-sufficiency attained by 1940 is not actually quite as great as would be indicated by comparison with the boom periods of heavy imports in 1920-26. Should Cuba attain a permanently higher level of employment and prosperity, the domestic consumption of many agricultural products would increase and necessitate increased production or increase imports.

Production of many products could be greatly increased if there were a profitable outlet. Such outlets could be developed both for the domestic market and for export. Consumer purchasing power of most people in Cuba is small, and the per capita consumption of such items as dairy products, eggs, and fresh vegetables is low. Consumption of these products could well be increased in the interests of better nutrition and health. This would require increased purchasing power, improved marketing facilities, such as roads, storage, and refrigeration, in addition to consumer education as to the desirability of increasing the use of such products.

Only part of the cows in Cuba are now being used for milk production, and the output of both milk and beef could be increased by improving the breeds, controlling cattle ticks, and supplemental feeding. The latter is purely an economic consideration, since the usual low price of beef does not now justify feeding grain. Corn production could be greatly increased, as could that of rice, beans, onions, garlic, and vegetable oils.

The development of additional crops for export in most cases requires further experimentation to determine the most suitable varieties, methods of production, and market requirements. The production of bananas, which already play an important part in Cuban exports, can be expanded if the cost of production is reduced and the threatening sigatoka disease is controlled. New plantings of improved varieties of cacao may prove profitable in certain areas. Cassava, or tapioca starch from yuca, also appears to offe· possibilities for export to the United States if yields are increased and manufacturing processes are improved. Other products that may offer possibilities for further experimentation are kapok, tung oil, and castor beans.

Certain other products required by the United States are not well adapted for production in Cuba. Among these are rubber, cinchona or quinine, abacá or Manila hemp, and silk. In some cases the soil and climatic conditions are not suitable, and in others Cuba, because of its relatively high wages, would not be able to compete with other countries where wages are very low, as in the Orient and in some other Latin American countries.

The future development of Cuban agriculture depends in large measure on diversifying production. Not only can the urban consumption be increased to provide a market for agricultural production, but the farmers themselves should produce more of the food they consume on the farm. In order to accomplish this the agricultural education and extension service should be greatly strengthened to reach farmers effectively in all parts of the island.

As a whole, the possibilities for the development of Cuban agriculture are bright. The country has large areas of good soil, a good climate, a continuous growing season, and an adequate supply of labor to maintain a relatively high standard of domestic consumption in addition to a thriving export trade. It is centrally

located near markets in the United States and near the trade routes of inter-American commerce. Furthermore, most of its products are of a semitropical nature either not produced at all or only in insufficient quantities in the United States.

§

FOOD CONSUMPTION IN GERMAN WORKER FAMILIES . . . .

By J. H. Richter*

Any comparison of national diets, as ascertained by national or household statistics, with the diets of other peoples or with minimum requirements as specified by nutritional scientists, is fraught with difficulties. There are still a number of uncertainties regarding minimum requirements of individual nutrients and many uncertainties in regard to completeness and comparability of statistics and differences in coefficients of analysis and conversion. Losses from producer and importer to final consumer vary. Waste of food in households also varies as among countries and even periods. Scales of energy value of individual foods differ so much that apparent variations up to 20 percent in total energy consumption as among countries may be explained by differences in those coefficients alone. Still more important is the fact that in the case of some foods it is extremely difficult to ascertain the average content of fats, proteins, minerals, and vitamins.

It appears that for many purposes comparisons of statistical food consumption of a country in a given period should be made with statistical consumption in the same country in a "normal period," rather than with consumption in other countries or with nutritional minimum requirements. At any rate, that fundamental comparison will always be needed to place the results of other analyses in the proper perspective. For of the statistical consumption in the normal period we know at least this much: whatever its shortcomings or superiorities in comparison with other countries or with nutritional yardstick specifications, the sort of actual diet that it implies corresponds to a known level of national health, physical fitness, and economic effort or welfare. Changes in the statistical diet compared with that of the normal period - in their effect upon the accustomed economic and physical capacities of a people - are probably more significant than any divergencies that may be found in comparisons with the diet of other countries or with nutritional standard specifications. The latter, on the other hand, are of great significance when it comes to the problem of exploring the possibilities of more adequate nutrition.

SOURCES OF INFORMATION

Household budgets as a source of information on the consumption of foodstuffs by specified population groups have been used for some time past. They are to supplement, rather than supplant, national consumption statistics as derived from total production and foreign-trade data. The main purposes of the collection of family-budget figures thus far have been the analysis of family expenditure by groups of commodities and the derivation of representative weights by expenditure groups for the construction of cost-of-living indices.

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TABLE 1.–*Tabulation of energy values of most important items in the German diet, 1939-41 with comparisons,*[1]

ITEM	ASSUMED FUEL VALUES PER 100 GRAMS[2]		WEEKLY CONSUMPTION PER FAMILY IN WORKER HOUSEHOLDS		WEEKLY RATIONED AND UNRATIONED CONSUMPTION PER FAMILY IN WORKER HOUSEHOLDS 1939-41[5]			FUEL VALUES OF WEEKLY CONSUMPTION				
										RATIONED AND UNRATIONED, 1939-41		
	PRE-WAR	WARTIME	1927-28[3]	1937[4]	ALL ADULTS "NORMAL" CONSUMERS	INCLUDING ONE ADULT MALE "LONG AND NIGHT WORKER"	INCLUDING ONE ADULT MALE "HEAVY WORKER"	1927-28 FAMILIES	1937 FAMILIES	ALL ADULTS "NORMAL" CONSUMERS	INCLUDING ONE ADULT MALE "LONG AND NIGHT WORKER"	INCLUDING ONE ADULT MALE "HEAVY WORKER"
	Calories	*Calories*	*Grams*	*Grams*	*Grams*	*Grams*	*Grams*	*Calories*	*Calories*	*Calories*	*Calories*	*Calories*
Bread, flour, and cereals, in terms of flour	360	360	6,962	6,992	6,954	7,404	8,004	25,063	25,171	25,034	26,654	28,814
Sugar, jams, sweets, etc., in terms of sugar[6]	400	400	1,113	1,063	[7] 1,386	[8] 1,386	[9] 1,386	4,452	4,252	5,544	5,544	5,544
Potatoes	80	80	9,765	10,200	12,700	13,700	14,700	7,812	8,160	10,160	10,960	11,760
Legumes	350	350	173	133	100	100	100	606	466	350	350	350
Other vegetables	30	30	2,450	2,265	[10] 2,450	[11] 2,700	[12] 2,950	735	680	735	810	885
Fruit	50	50	1,817	1,160	1,000	1,000	1,000	909	580	500	500	500
Meats	300	[13] 250	2,817	2,278	[14] 1,925 [15] 1,575	[14] 2,025 [15] 1,775	[14] 2,425 [15] 1,975	8,451	6,834	[14] 4,812 [15] 3,938	[14] 5,063 [15] 4,438	[14] 6,062 [15] 4,938
Fats and oils	800	800	1,410	1,277	1,040	1,060	1,167	11,280	10,216	8,320	8,480	9,336
Cheese	300	300	294	290	262	262	262	882	870	786	786	786
Curds	[16] 100	[16] 100	[17] -	[17] -	[17] 75	[17] 75	[17] 75	-	-	75	75	75
Eggs	[16] 80	[16] 80	[17] 9.1	[17] 5	[17] 4	[17] 4	[17] 4	728	400	320	320	320
Fish	[18] 130	[19] 130	408	421	300	300	300	530	547	390	390	390
Whole milk	[18] 60	[19] 55	9,127	6,890	4,900	4,900	4,900	5,476	4,134	2,695	2,695	2,695
Skim milk	36	36	96	267	2,000	2,000	2,000	35	96	720	720	720
Total calories per family per week[1]								[21] 66,959	[21] 62,406	[14] 60,441 [15] 59,567	[14] 63,347 [15] 62,722	[14] 68,237 [15] 67,113
Total calories per person per day[1]								2,278	2,174	[14] 2,056 [15] 2,026	[14] 2,155 [15] 2,133	[14] 2,321 [15] 2,283
Percentage of 1927-28								100	95	[14] 90 [15] 89	[14] 95 [15] 94	[14] 102 [15] 100
Percentage of 1937								105	100	[14] 95 [15] 93	[14] 99 [15] 98	[14] 107 [15] 105

[1] Excludes certain products such as coffee, tea, cocoa, alcoholic and non-alcoholic beverages, cream, and not separately specified foods.

[2] Based on CHATFIELD, CHARLOTTE, AND ADAMS, GEORGIAN. PROXIMATE COMPOSITION OF AMERICAN FOOD MATERIALS. U. S. Dept. Agr. Cir. 549, 91 pp. 1940. Estimates for groups of products made by the Office of Foreign Agricultural Relations.

[3] [GERMANY] STATISTISCHES REICHSAMT. DIE LEBENSHALTUNG VON 2000 ARBEITER-, ANGESTELLTEN- UND BEAMTENHAUSHALTUNGEN. [Germany] Statis. Reichsamt Einzelschr. z. Statis. des Deut. Reichs, No. 22. 1932. Sample of 896 worker families. Family average 4.2 persons, of which 2.4 adults and 1.8 children under 15 years of age. Average family income 3,325 reichsmarks.

[4] [GERMANY] STATISTISCHES REICHSAMT. WIRTSCHAFTSRECHNUNGEN VON 350 ARBEITERHAUSHALTUNGEN FÜR DAS JAHR 1937... Wirtschaft u. Statis. 19: 118-126, 323-329, illus. 1939. Sample of 350 worker families at lower economic level. Family average 4.1 persons, of which 2.2 adults and 1.9 children under 15 years of age. Average family income 2,156 reichsmarks, or about 2,600 reichsmarks at 1927-28 price level (conversion made on basis of official cost-of-living index).

[5] Rationed consumption as per official rations; unrationed consumption estimated by the Office of Foreign Agricultural Relations. Worker families assumed to have been constituted exactly as those polled in the inquiry of 1927-28: 1.24 men, 1.16 women, 0.3 child up to 3 years old, 0.4 child 3 to 6 years old, 0.6 child 6 to 10 years old, and 0.5 child 10 to 14 years old, or 2.4 adults and 1.8 children, or 4.2 persons to an average worker family. For these age and sex distributions see pp. 13-16 of reference cited in footnote 3.

[6] Sugar content of items other than sugar estimated at about 50 percent.

[7] Estimated increase over 1927-28 30 percent, revising upward the estimate given in Foreign Agriculture, October 1941.

[8] Estimated increase over 1927-28 40 percent, revising upward the estimate given in Foreign Agriculture, October 1941.

[9] Estimated increase over 1927-28 50 percent, revising upward the estimate given in Foreign Agriculture, October 1941.

[10] Estimated increase over 1927-28 zero.

[11] Estimated increase over 1927-28 10 percent.

[12] Estimated increase over 1927-28 20 percent.

[13] Estimated on basis of assumption that wartime meat supply has less fuel value because of higher share of lean meat.

[14] Up to June 1, 1921, before meat ration was reduced.

[15] From June 2, 1941, after reduction of meat ration.

[16] Per egg.

[17] Number.

[18] Lower fuel value estimated on basis of lower fat content of fresh milk in Germany.

[19] Estimated on basis of assumption that wartime fat content of fresh milk is below pre-war standard.

[20] Family of 4.2 persons.

[21] Family of 4.1 persons.

To what extent available family-budget data can be regarded as representative of the consumption levels and consumption habits of a specified population group is an open question. Compared with similar statistics collected in other countries, the German inquiries build on very small samples. Since standard errors for the consumption of the individual foodstuffs are not given, the reliability of the estimates of average consumption by products cannot be statistically determined.

A relatively reliable and comprehensive inquiry into family budgets appears to be that of 1927-28, giving results for 896 worker families, 542 families of salaried employees, and 498 families of civil servants.[1] The average family income for the 896 worker families was 3,325 reichsmarks a year. The average size of the worker families was 4.2 persons - 2.4 adults and 1.8 children under 15 years of age. A later inquiry, conducted by the German Labor Front, related to the year 1937;[2] official statements made both before the inquiry was started and after it had been completed indicate that the 1937 study was concerned with worker families at lower economic levels. The average family income was only 2,186 reichsmarks a year, or in terms of 1927-28 purchasing power about 2,600 reichsmarks a year (conversion made on the basis of the official cost-of-living index). The average size of the families was 4.1 persons - 2.2 adults and 1.9 children. Expressed in 1927-28 buying power, the average per capita income of the families polled in 1937 was 634 reichsmarks, compared with 792 reichsmarks for the families studied in 1927-28. The families studied in 1927-28, therefore, had a per capita income 25 percent larger than that of the families studied in 1937.[3]

COMPARISON OF 1937 WITH 1927-28

Table 1 gives consumption data and a calculation of the energy values of the most important items in the diet of German worker families. It compares wartime consumption of 1939-41 with consumption in the normal period 1927-28 and with the data of 1937 consumption by 350 worker families at lower economic levels. The 1937 data are not directly comparable with those for 1927-28 because they represent a different

[1] [GERMANY] STATISTISCHES REICHSAMT. DIE LEBENSHALTUNG VON 2000 ARBEITER-, ANGESTELLTEN- UND BEAMTENHAUSHALTUNGEN. [Germany] Statis. Reichsamt Einzelschr. z. Statis. des Deut. Reichs, No. 22. 1932.

[2] [GERMANY] STATISTISCHES REICHSAMT. WIRTSCHAFTSRECHNUNGEN VON 350 ARBEITER-HAUSHALTUNGEN FÜR DAS JAHR 1937. TEIL I: DIE EINNAHMEN UND AUSGABEN. TEIL II: LEBENSMITTELAUSGABEN UND LEBENSMITTELVERBRAUCH. Wirtschaft u. Statis. 19: 118-126, 323-329, illus. 1939.

[3] Other household budget inquiries made in Germany include those published as follows:

[HAMBURG] STATISTISCHES LANDESAMT. DIE LEBENSHALTUNG MINDERBEMITTELTER FAMILIEN IN HAMBURG IM JAHRE 1925. Statis. Mitt. über den Hamburg. Staat 20, 43 pp. 1926. Sample of 70 families.

[HAMBURG] STATISTISCHES LANDESAMT. AUS HAMBURGS VERWALTUNG UND WIRTSCHAFT. V. 27, No. 5; v. 28, Nos. 9, 10, and 11. Sample of 300 families.

[HAMBURG] STATISTISCHES LANDESAMT. DIE LEBENSHALTUNG DER WIRTSCHAFTLICH SCHWACHEN BEVÖLKERUNG IN HAMBURG IN DEN JAHREN 1925 BIS 1929, INBESONDERE IM JAHRE 1927 AUF GRUND DER WIRTSCHAFTSRECHNUNGEN VON HAUSHALTUNGEN. Statis. Mitt. über den Hamburg. Staat 26, 64 pp., illus. 1931. Sample of 146 worker families, 102 school teachers' families, and 46 salaried employees' families, for 1927, and sample of 26 identical families for the years 1925 through 1929.

Several unofficial family-budget studies are also listed in the following compilation:

DULON, ELISABETH. UNTERSUCHUNGEN ÜBER DIE ERNÄHRUNG BÄUERLICHER FAMILIEN. Ztschr. f. Ernährung Beihefte 2, 48 pp. 1937.

PAETZMANN-DULON, ELISABETH. UNTERSUCHUNGEN ÜBER DIE ERNÄHRUNG BÄUERLICHER FAMILIEN. ZWEITER TEIL. Ztschr. f. Ernährung Beihefte 6, 54 pp. 1940. The two studies by Dulon are on inquiries made into the nutrition of farmer families.

STAEHLE, HANS. FAMILY BUDGETS. Econometrica 3: 106-118. 1935.

universe of worker families with real incomes considerably below those of the families polled in 1927-28, as indicated above. If, nevertheless, a comparison is made, it appears that the fuel value of per capita food consumption in the worker families polled in 1937 was 5 percent below that of the consumption in the families polled in 1927-28, whose average real income was about 25 percent higher.

TABLE 2.—*Percentage composition of food diet and energy value of food consumption in Germany in 1939-41 compared with those of the pre-war period*

FOODSTUFFS	PRE-WAR PERIOD 1934-36[2]				1939-41 CIVILIAN PER CAPITA CONSUMPTION[1]				
					PERCENTAGE OF PRE-WAR CONSUMPTION	INDEX OF ABSOLUTE QUANTITIES CONSUMED			
	PROTEINS	FATS	CARBOHYDRATES	CALORIES		PROTEINS	FATS	CARBOHYDRATES	CALORIES
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Bread and flour	28	2	47	30	100	28	2	47	30
Other grain, rice, etc.	2	0	3	2	50	1	0	1.5	1
Legumes	1	0	1	1	80	0.8	0	0.8	0.8
Potatoes	8	-	23	13	[3] 130	10.4	-	29.9	16.9
Sugar	-	-	14	8	105	-	-	14.7	8.4
Fruits and nuts, cocoa, tropical fruits, vegetables	3	2	5	4	80	2.4	1.6	4.0	3.2
Beverages containing alcohol	2	-	2	3	60	1.2	-	1.2	1.8
Fats and oils	-	61	-	19	70	-	42.7	-	13.3
Fresh milk (including skim milk)	16	12	5	8	80	12.8	9.6	4.0	6.4
Cheese	5	2	0	1	70	3.5	1.4	-	0.7
Meat	28	18	-	9	80	22.4	14.4	-	7.2
Fish	4	1	-	1	50	2.0	0.5	-	0.5
Eggs	3	2	-	1	65	2.0	1.3	-	0.6
Total	100	100	100	100	[4] 90.8	[5] 86.5	[5] 73.5	[5] 103.1	[5] 90.8

[1] Estimated by the Office of Foreign Agricultural Relations. See also Foreign Agriculture of October 1941.

[2] DECKEN, HANS V. D. ENTWICKLUNG DER SELBSTVERSORGUNG DEUTSCHLANDS MIT LANDWIRTSCHAFTLICHEN ERZEUGNISSEN. [Germany] Reichs Min. f. Ernähr. u. Landw. Ber. über Landw., Sonderheft 138, 152 pp., illus. 1938.

[3] Represents an upward revision from 115 as previously given: RICHTER, J. H. FOOD RATIONING IN GERMANY. Foreign Agr. 5: 423-441. 1941. (See p. 435.)

[4] Average, weighted on a calorie basis.

[5] Representing wartime consumption as percentage of pre-war level.

The difference of 5 percent in calories consumed confirms calculations made previously in the Bureau of Home Economics, which found this difference to be 4 to 5 percent. Repeated references to a Bureau of Home Economics' calculation that the German workers' diet in 1937 was 15 percent below that of 1927 are therefore incorrect, and the conclusions sometimes based upon them cannot be upheld. It would be a mistake to assume that food consumption in Germany had been inadequate for several years before the outbreak of the war. In fact, available data on national consumption as well as

first-hand experience unquestionably confirm the opinion expressed by Sir John Orr and David Lubbock.[4] In the summer of 1937 they visited Germany to get first-hand information on the food position. They found no general shortage of food and "*no evidence that malnutrition was more prevalent in Germany than in other large countries, such as Great Britain or the United States.*" (Authors' italics, pp. 17-18.)

COMPARISON OF 1939-41 WITH PRE-WAR YEARS

Wartime consumption of foodstuffs by worker families in 1939-41, as far as can be ascertained, may have amounted to from 90 to 100 percent of the calorie values consumed in 1927-28 and to from 95 to 105 percent of the calorie values consumed in the 1937 worker families at the lower economic level. It should be noted, however, that the wartime diet's proportions of fats and animal proteins and of food vitamins and mineral salts are generally reduced. For the average of the civilian population the reduction in fats and animal proteins may have been as much as 25 percent compared with pre-war, and of all proteins, about 15 percent (table 2). These reductions, while still greater for so-called normal consumers, were less extensive for worker families than for the average of the whole civilian population.

[4] ORR, JOHN, AND LUBBOCK, DAVID. FEEDING THE PEOPLE IN WAR-TIME. 88 pp., illus. London. 1940.

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